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ABSTRACT

This report, Comm-Bacc, examines the activity of graduates who received the baccalaureate degree in the academic year 1971-72 from the collegiate institutions of Pennsylvania. The focus concerned the condition of employment and nonemployment that existed in the late summer and early fall of 1972. Data were collected from the placement office at each institution. Major conclusions were: (1) the number of graduates still seeking jobs in the late summer and early fall of 1972 was high: 1 out of 5 in the total group and up to 30% in some fields; (2) a large proportion of those with nonprofessional preparation who found employment were in occupations identified as remote to the college major; (3) Pennsylvania benefits from its own investment in higher education; (4) women graduates are not retiring from either the labor force or the learning force but are continuing their public careers; (5) there is no evidence (1972) of an oversupply of educated persons in the fields of engineering or education; and (6) graduate school attendance is below the level one might anticipate from national data. Appendices include statistical data and institution report forms. (MJM)

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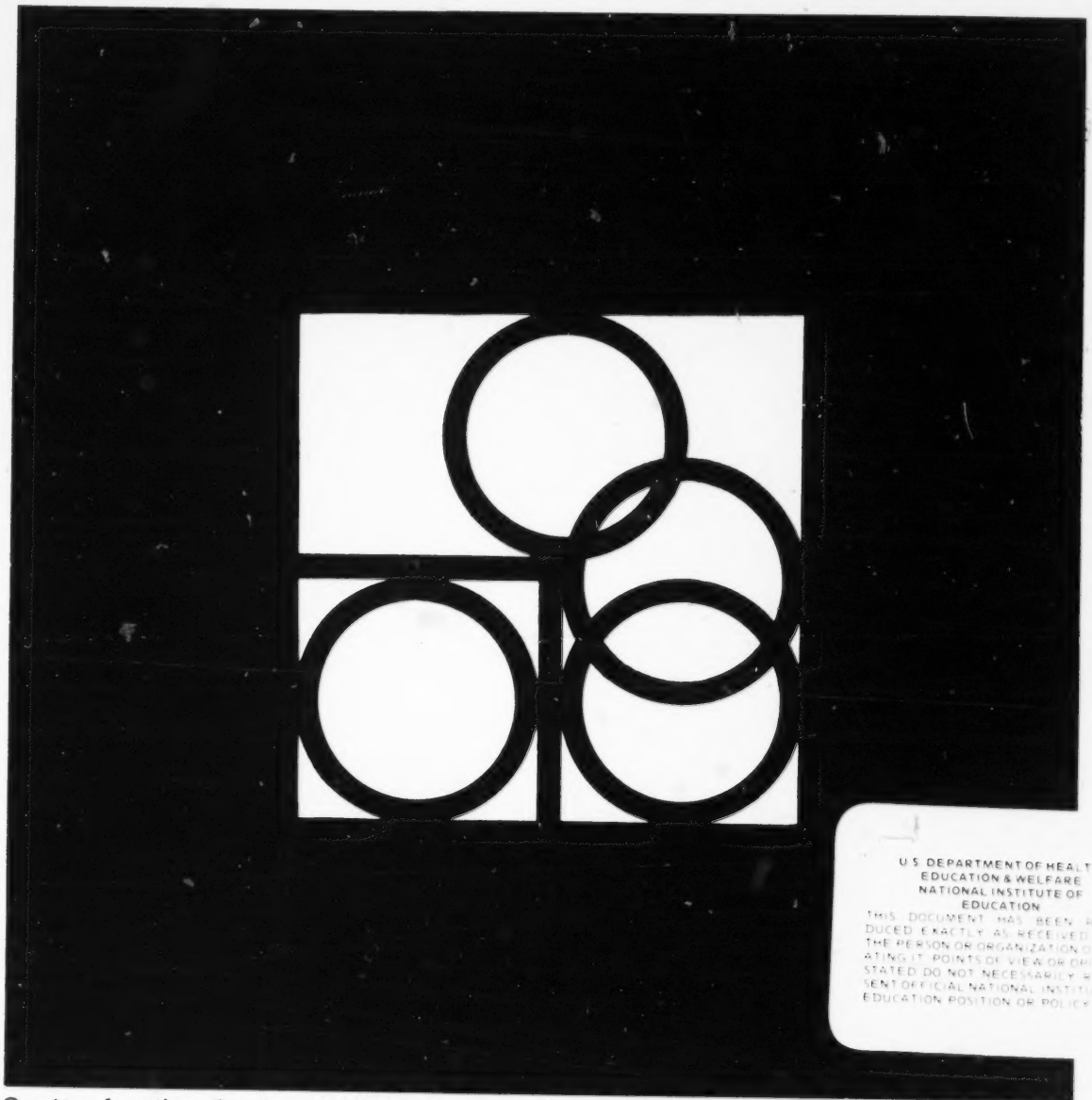
William Toombs



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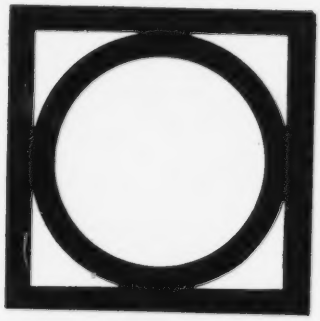

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Preface

In the Commonwealth of Pennsylvania each year more baccalaureate degrees are granted than in all of Great Britain. That comparison may serve to emphasize the cooperation that was required to put this compilation and analysis together. The good will and diligence of many, many placement offices at institutions, large and smali, was indispensable. From Harrisburg the Division of Research provided not only part of the funds for the study but also the finest kind of professional assistance. The Division of Statistics was equally responsive to our requests for information. At the Center for the Study of Higher Education a number of research personnel made notable contributions: Cheryl Toronyi, Steve Millman, and David Watkin all shared the planning and execution of the project. Appreciation is also due to Janet Bacon for her editorial suggestions and to Gina Sack and Joyce Miller whose skills on the Composer contributed to the completion of the manuscript.

Introduction

Comm-Bacc examines the activity of graduates who received the baccalaureate degree in the academic year 1971-72 from the collegiate institutions of Pennsylvania. Its principal focus is the condition of employment and nonemployment that existed in the late summer and early fall of 1972.

The study examines the meeting of individual choices with a set of employment and nonemployment options that were present in a very short time range—the first few months after graduation—to a group of graduates in one state. In the sense that it looks at the job market and the occupational outcomes that resulted, it is a manpower study; but the real intention is to focus on the transaction between education and society at a particular moment in time. Such an inquiry, by the very form in which it is cast, reflects ideas and expectations about college.

The collegiate experience is a focal point for the expectations of individuals, parents, and society. Some of these expectations cluster about the development of the student into a person with moral sensitivity and intellectual refinement, what Jerome Bruner has identified as the "sensibility of the mind." Other expectations focus upon the cultivation of an informed and responsible citizen socialized to the ways of our society. Then, too, there is a general expectation that career-oriented abilities of individual students will be developed in ways that can be directly or indirectly useful to the common weal. Although this study concentrates on the last of these expectations, there is no contention that the other two goals or purposes are less worthy or less important.

Expectations are differentiated in their origins, too. Some of them reside in society at large, others emanate from specialized groups like the family or the faculty, and many of them, very many of them, reside in the individual. There is no question which expectations hold priority in our society, for we clearly believe that the open but informed choices of individuals offer the surest pathway to the development of common benefits.

This report contains the results of the Comm-Bacc study in the following order:

I. Summary of the findings and a set of recommendations.

II. Discussion of the topic in a conceptual setting and summaries of other studies that bear on this exploration of the relationship between education and jobs. This study stands in comparison with these studies made on a national basis, many of which touch attitudes or intentions as well as outcomes.

III. Methods and procedures of the study.

IV. Detailed discussion of the data.

Basic figures are included in the text; all tables are gathered in Appendix A.

Employment data is divided into standard occupational groups and supplemented by information on geographic location. Nonemployment data is divided into graduate study, military service, job seeking, and other nonparticipation in the civilian labor force.

V. Recommendations presented in greater detail with some speculations and questions that seem to merit future examination.

I. Summary of Findings and Recommendations

A. General Conclusions

The entry of the college class of 1972 into the labor force was sluggish throughout Pennsylvania for both the specialized professional majors and those holding general degrees in nonprofessional fields. Of the possible outcomes of a tightening job market—delay at entry, acceptance of jobs not closely identified with field of study, and migration to find employment—there is evidence of only the first two effects in the overall picture presented by this study.

The major conclusions of the study are as follows:

1. The number of graduates still seeking jobs in the late summer and early fall of 1972 was high: one out of five in the total reported group and up to 30% in some fields.

2. A large proportion (72%) of those with nonprofessional preparation who found employment were in occupations identified as remote to the college major. This is not quite so unusual a condition as the figures might indicate because the largest share of those who majored in communications, for example, were engaged in high school teaching, thereby adopting a profession for which they did not have specific preparation but one which such graduates often enter. The matter of "remoteness" is always a two-edged argument because BA's and BS's in history or economics, for example, who move into managerial and sales work support the quality of business operations in ways not directly attributed to higher education. Put another way, higher education makes more contribution to the skill level of the labor force than it gets credit for.

3. Pennsylvania benefits from its own investment in higher education. More than 72% of the graduates stay in the State for employment. Even more striking is the fact that almost half remain in the vicinity of the institution from which they graduated.

4. The very small number of graduates (3.6%) not seeking employment or going to graduate school is one of the most striking pieces of data because it means women graduates, who normally comprise about 43-45% of the baccalaureate recipients, are not retiring from either the labor force or the learning force but are continuing their public careers.

5. There is no evidence at this time (1972) of an oversupply of educated persons in the fields of engineering or education, two areas popular with the gloomier prophets. (Engineering is a particularly sensitive field because of the high specialization of new entrants.) This present condition does not deny the validity of the forecasts but emphasizes that the essential quality of a prediction, as contrasted with a prophecy, is the time it will come about. The importance of accurate, regular data collection to track these predicted conditions cannot be understated.

6. Graduate school attendance, which engages about 15% of the recent Pennsylvania baccalaureates, is below the level one might anticipate from national data where it has been running near 20%. Military service now engages only a small part of the graduating class (3.6%) and appears to be related to ROTC programs.

B. Recommendations

1. It is feasible and desirable to systematically collect data on the first employment and other activities of young people prepared at the postsecondary level in Pennsylvania. While the task is formidable, this Comm-Bacc project has demonstrated that it can be done economically by any of several means at the baccalaureate level. Since the study indicates the local nature of the employment market, it suggests that statewide reporting systems would be more timely and of superior accuracy to disaggregations of national data in attempting to resolve the uncertainty of the job market for college graduates. Colleges and universities recognize the high utility of this information in feeding back changes in the market and, if their interests are respected, can be counted on for cooperation.

2. There are large unstudied areas in the entry of individuals into the labor market, in the relationship of manpower data and statewide policy, and in the relationship of the curriculum and employment. The State Department of Education can do much to focus analysis on key issues by a program of cooperative research that combines the resources of the Department with those of colleges and universities as has been done at the public school level.

3. Such research would enable the State Department of Education to make a valuable contribution to postsecondary education by taking a leadership role in improvement of career counseling and placement activity, both of which are gaining new importance because of the complex job market and the intricate relationship of education and economic planning. Since delayed entry into the labor force, extending well after graduation, means that students will lose contact with campus operations and be forced to depend upon their own information, the State Department, by a variety of usual means such as workshops, institutes, inservice seminars and through ways yet to be devised, can do much to aid the adjustment of the educated labor supply to changes in demand.

II. Fitting Higher Education to the Labor Market

A. Summary of the Related Studies

The relationship between higher education and employment is by no means an unstudied phenomenon. Examinations of the subject vary around a set of conceptual issues and within boundaries of time and place. Some recent studies provide instructive comparisons with the Comm-Bacc information. After reviewing these, brief attention will be given to some of the other contemporary work on the topic.

1. Comparisons around some key points can be made between the material indicated on the following pages and the results of a Bureau of Labor Statistics study made in October 1971 which reviewed job placement for all degrees, three-fourths of which were baccalaureates. The material is reported in a *Special Labor Force Report, July 1972*, and analyzed more completely in an article by Vera C. Perrella "Employment of Recent College Graduates" in *Monthly Labor Review*, February 1973.

   According to this report, 8.5% of the total bachelor's degree holders were unemployed as of October 1971. In the Comm-Bacc Study, the rate on a similar basis was 28%. The BLS Study sheds some interesting light on the sources of the difference. Just over 40% of those employed reported delays in finding employment. For about half that group (20% of the total), the delay was less than five weeks; for another 7%, delays were more than fifteen weeks. This shows that the *sluggishness* mentioned in Comm-Bacc's general conclusion is a visible feature of the college level employment process.

   Differential rates of unemployment in the nationwide study are reflected in the more recent data for Pennsylvania with humanities and social sciences having high unemployment figures of 13% and 9.2% respectively. The national pattern of employment in education duplicates almost exactly the situation in Pennsylvania with 78% in related employment and no sharp rise in joblessness. When all fields are considered, the BLS study reports about half of those employed working at jobs related to their field of study. The Comm-Bacc Study reported a much higher proportion, about two-thirds, in related work.

   The general configuration of the labor market for those educated at the college level was about the same in October 1971 over the nation as it was in Pennsylvania in the summer and early fall of 1972. Apparently, if the large changes in employment conditions predicted are imminent, then the time they begin and the speed with which they may occur are the crucial pieces of missing information.

2. Since 1966 the American Council on Education has surveyed a sizable sample of the nation's freshman class. The follow-up study for the entrants of 1967, the "class of '71" in campus parlance, was released in March 1973: A. E. Bayer, J. T. Royer, R. M. Webb, *Four Years After College Entry*, Vol. 8, No. 1. This study shows that over the four years of college, career interest: (1) in the physical sciences decreased from 7.2% to 5.7%; (2) in the social sciences increased from 14.5% to 20.6%; (3) in education increased from 10% to 13.5%.

   Using the basic information from the ACE survey, Helen Astin and Ann S. Bisconti made a more detailed analysis of student career plans. Their report, *Career Plans of College Graduates 1965 and 1970*, Report No. 2 of the College Placement Council Foundation, is based on student intentions rather than actual behaviors, but it gives data supplemental to Comm-Bacc. The study indicates, for example, the stability of overall patterns between 1965 and 1970. Again, in comparing field of preparation with intended career, the ACE data provides an intended choice; Comm-Bacc's data, in a sense, an actual choice. For example, 67% in the ACE sample intended engineering career categories, while 61% of Comm-Bacc graduates actually entered engineering in the period after graduation. Sixty-six percent in the ACE sample intended education; 60% of Comm-Bacc graduates entered the field. Seventy-five percent of the ACE sample intended to enter busi-

ness; only 57% of Comm-Bacc graduates had entered identifiable business occupations. This last piece of data is excellent evidence for indicating the difficulty of classifying occupations, because many job categories use talents from majors such as business.

3. Another effort notable for its continuity in studying the relationship between college preparation and career development is the work of Frank S. Endicott at Northwestern University. For twenty-eight years he has conducted a survey of business employers to assess the prospects for college graduates. Recent titles are *Trends in Employment of College and University Graduates in Business and Industry 1973, 1972, 1971,* etc. The report summarizes recent hirings and expected job openings in major companies in November of each year. The 1973 data report fewer campus contacts for 1973 even though hiring levels will be up. This confirms an impression, developed from Comm-Bacc visits with campus placement offices, that recruiting declines have resulted in later placements and given an illusion of much more change in the job market than actually occurred. Another characteristic of the job market for college people, the capacity for very rapid change, is visible in the Endicott data of 1971-72. Between fall 1970 and the end of the academic year bright prospects dimmed, and the year was a poor one for college placement.

4. Another category of studies, always of interest and now of singular importance, deals with long-term analysis and prediction, which has increased remarkably since 1969. The *Manpower Report of the President*, 1972, provides a general outline of job prospects for college-trained people. More detailed is the Bureau of Labor Statistics Bulletin, Number 1673, entitled *College Educated Workers 1968-80,* which projects the need in specific occupations, emphasizing the high demand in the health professions and in fields such as accounting.

5. Most recently, the Carnegie Commission on Higher Education has directed attention to the labor market which degree recipients from the colleges and universities enter. In April 1973 a Commission Report entitled *College Graduates and Jobs* was published. A related collection of papers edited by M. S. Gordon entitled *Higher Education and the Labor Market* will be published by McGraw-Hill in the very near future. The Carnegie Commission Report deals with the long-term job market, areas of occupational surplus and shortage, and the question of how colleges and universities might respond to the changing labor market situation. This new report, taken together with Forger, Astin, and Bayer's recent work, *Human Resources and Higher Education,* published by the Russell Sage Foundation in 1970, provides excellent coverage of the major issues and prospects.

Conclusion. Few answers or hard guidelines emerge directly from these comprehensive efforts to study the relation between college education and employment, but they are grist for the creation of policy. What is clear throughout is the new relationship higher education, indeed all postsecondary study, holds to the labor force. According to these studies and Comm-Bacc results, the neglected area, the area that must be studied to produce sound adjustments or refinements to policy, lies with short and midterm time spans and within geographical or

economic market areas served by an institutional complex. In spite of ambition and illusion, most colleges and many universities are related to an identifiable local employment area rather than to a national market.

B. Approaches to Policy: Education and Manpower Prediction

1. The Past. If the absence of data in sufficient detail is one drawback to using job information as a guide for educational policy, the problems of concept and purpose in manpower prediction present another. Writing in the *World Year Book of Education, 1971-72* (p. 216), Maureen Woodall pointed up the basic issue of purpose. In countries with centralized economic planning, the act of forecasting future levels of employment becomes the basic policy statement that controls both education and the economy. In more open economic and political systems, prediction is attempting to describe future economic or social demand to guide the independent decisions of educators and individuals. Forecasting what is *likely* to happen is very different from forecasting what *ought* to occur.

In the past, in the "open societies" of Karl Popper, we have viewed the lack of exact correspondence between the fields of preparation in the colleges and the job structure as a source of advantageous flexibility. The condition has allowed those with advanced education to move rather freely across the job market, responding to demand as it appears and contributing thereby to overall economic adjustment. Large numbers of those trained in teaching, for example, have moved into business and public administration or management after their initial entry into the labor force. Recently, and especially since 1969, this range of flexibility has widened into uncertainty, and this uncertainty has reached into the highly educated categories, not only among the new hires, but also among incumbents in specialized areas. This uncertainty about the job market for college graduates has raised doubts about the wisdom of a flexible system and drawn new attention to the relationship between the labor force and education.

2. A New Sensitivity. This sensitivity has several origins. Some perceive a point of saturation for educated manpower, limited opportunity having replaced unlimited prospects for the colleged trained man or woman. In an article entitled "Professional Manpower: The Job Market Turnaround," in the *Monthly Labor Review* of October 1972, Michael F. Crowley treats the specific question of college graduates and the professional market. He suggests that a general condition of *underemployment* is likely to become a characteristic of the next ten years.

Others see the current perturbations as a temporary dislocation that will be replaced by steady upward growth again as the economy expands to meet new demands for production and services. But any unemployment is a sensitive matter in the United States and it is particularly sensitive when the lack of jobs is concentrated in one segment of the population. The likelihood of high unemployment among the educated, among war veterans, and among minorities has strong political implication and cannot be ignored. Related to this is the simple matter of efficient use of skilled labor. Underemployment of human talent is a costly policy in any society as we know from our work overseas with developing nations.

Still other sensitivity to the job market arises from the perceptions of the student and his family. Traditions of social mobility reinforce the expectation that more education leads to better jobs. Added to this is the considerable sacrifice made by families and stu-

dents to support undergraduate study. There is an even more immediate consequence that arises from widespread use of student aid programs which depend on student loans. As the result of conscious public policy decisions, many college graduates face a future mortgaged by these loans and they hold some anxiety about repaying them.

Finally, sensitivity to the job market for college graduates arises because institutional plans can be strongly affected by radical alterations in the job market. The introduction of new programs and the pruning away of outmoded courses is guided not only by the state of knowledge in each discipline but also by the future state of the labor market. All these factors have created doubt about the value of the flexible approach and raised new interest in educational plans that are a product of manpower prediction models and student choice models. Both of these views merit a brief summary.

3. Manpower Prediction Models. Manpower prediction models usually aim at a description of future requirements of specific occupational and professional categories. Four patterns of forecasting have emerged although many refinements and corrections are added: (1) Future personnel needs are estimated by employers. (2) The pattern of occupational distribution in the present labor force is carried forward and applied to the changed population of some future time. (3) Trends in occupations (growth or decline) are derived from a previous span of time and projected to some future time horizon. (4) Normative patterns or ratios are assumed to exist in one economy and comparative trends for the unit under study are constructed. (See Wm. G. Bowen, *Economic Aspects of Education*, Princeton, 1964).

The most serious shortcoming of manpower prediction is that it presents by its specificity a degree of accuracy that is not there. A prediction of a demand for 1000 statisticians ten years hence may or may not be wrong, but we have no ready means of identifying the probable range of error. A second limitation, also serious, is that technological change is poorly accounted for. Since alterations in technology tend to be sudden and massive, trend lines seldom include them. Then, of course, alternative means of production may require quite different personnel combinations, yet leave the outputs unchanged. Still other phenomena contribute to inaccuracy: pricing changes alter the specialized job market through "cobweb" effects; occupations that are being educationally upgraded absorb persons trained at higher levels than projections show; new specialties appear. Howard R. Bowen has treated the problem succinctly in the *Educational Record* of January 1973.

4. Student Choice Models. Student choice models attempt to forecast the broad categories of prepared people, i.e., the supply, rather than the specific occupational requirements. The underlying assumption is that the great uncertainties of the economic demand model can be met most effectively by broad training, flexibility of individual choice, and an open labor market. Because education, unlike industry, must commit itself to projections and estimates by designing programs, preparing faculty, and counseling students, this open approach has been preferred as the basis for educational policy.

The nature of student choice bears explaining. Students as individuals may exercise choice but they do so within a framework of curricular offerings and knowledge of the market. They also face limitations of time, place, information, and personal ability, so the choice is scarecely a random one.

In general, student choices follow two patterns—(1) what has been called the "cannonball" pattern, where career choice is made early and the steps to fulfill it taken in a regu-

lar sequence; (2) a more open pattern in which a student comes to undergraduate years without a definite career objective and may change as many as three or four times during the course of undergraduate years. He obtains a general preparation aimed toward the cultivation of his own abilities rather than preparation pointed at a specific slot in the job market. In either case it is clear that the student choice approach depends upon an informed decision by the individual in an atmosphere of flexibility and mobility. Educational systems are called upon to provide a wide range of curricular options, freedom to change program, much information about the labor market, and a counseling or placement operation with considerable sensitivity.

5. Comm-Bacc Contribution to Manpower Prediction and Student Choice.
This study, the Comm-Bacc project, can best be viewed as a description of one segment of the process by which supply meets demand. The time span is relatively short, about five months after graduation in 1972; the population is narrow, baccalaureates; the geographic limits are fixed, the Commonwealth of Pennsylvania. While the data stand alone as descriptive facts, their interpretation is shaped by the author's convictions. Briefly stated, these predilections emphasize the importance of economic demand studies as a source, invaluable but not determinant, for the creation of new programs of study and for the modification of older curricula. At the same time, general manpower data may not, must not, be used to coerce student choice by the use of quotas or closed options. The medium here, the only acceptable one, is information which will make the student's choice an informed decision for which he himself carries the responsibility.

To the manpower approach the Comm-Bacc study contributes the following observations: (a) Timing of information is a very crucial variable. Predictions of change in demand are of very limited use in policy decisions unless a time schedule is included. Closely related is the need for continuous yearly monitoring of employment conditions because rapid alterations are to be expected. (b) Geographic distinctions are important. Employment areas for institutions can be described in basic terms and detailed information about them collected. (c) Since many of these conditions in the educated labor market are new, procedures will have to be developed to introduce guiding information into academic program design.

For the student choice, equally important implications emerge: (a) The principal impact of placement or career development offices is likely to shift away from job finding, even away from career counseling, toward a general educational function providing information that can be continuously useful to individuals after graduation. (b) The difference between professional preparation and general education in terms of entry level and search strategies is profound. Students should be introduced to these distinctions early in their college years. (c) Faculty are an important source of guidance and, with the new elasticity in the job market, should be introduced to the kind of information needed to update their impressions of the employment process. (d) There is increasing political sensitivity to the matter of employment opportunities for the highly, and expensively, educated. Fundamental changes are underway in the relationship of education to the economy, and the placement or counseling functions, as well as the institution itself, is at the center of them.

III. Methodological Considerations

Because this study was the first effort of its kind in Pennsylvania, the major emphasis was placed upon collection rather than upon sampling design or analysis. The collection effort has three aspects: *design, execution* or *collection,* and *the response pattern.*

A. *The Design*

The problem of design involves fitting definitions that are as unambiguous as possible into a meaningful pattern, i.e., deciding what to collect. A pretest indicated that placement offices differed widely in the type of information they obtained and, in fact, whether they received any information at all. In an effort to link these practices into a common academic taxonomy and, at the same time, take advantage of data already gathered by records offices, the degrees as reported in the Higher Education General Information Survey (HEGIS) were taken as a base.

The selection of a suitable occupational classification structure was more difficult. Whether to use job classes or industry classes as a basis was a fundamental issue, followed by questions of whether U. S. Census, Bureau of Labor Statistics, or some of the modified typologies (Roe, for example) would be most useful. With the 1970 Decennial Census reports nearing completion, the value of cross-comparisons provided good reason for using U. S. Census categories. For each general area of study, e.g., engineering, the occupational classes were presented in two sets. The first and more detailed contained all those occupations that were judged close to the degree field by three persons familiar with job descriptions of the U. S. Census. These classes, which represent an arbitrary typology, are reported in the tables as closely "related" to the field of preparation. The more general classes, italicized on the reporting schedules, are reported as "remote" from the field of study (See Appendix B).

Similar kinds of choices appeared with nonemployed categories. "Graduate Study" and "Military Service" were acceptable only if they were full-time study. Location presented the problem of an appropriate reference point and it was resolved by having reports made in relation to the institution. By grouping all institutions in any given "planning region" of the Commonwealth, the migratory pattern was revealed.

A second problem of design involved the source of information to fill out the matrix. Fundamental to the question was whether to construct a sample or go after the universe of all Pennsylvania degrees. Closely related was the issue of whether the institution or the individual should be the unit of study. Several factors pressed toward the broad approach covering as many degrees as possible through the institutions. Since it was beyond the scope of existing accurate information about student whereabouts to construct a reliable sample group either by random selection or stratification, "all degrees" was used as the target population; even if returns were disastrously incomplete they would provide information upon which later efforts at structured sampling could be based. Then, too, many placement or alumni offices already collect data for their own use and there seemed little point in making an expensive individual collection throughout the population.

It was necessary, nevertheless, to provide for several eventualities certain to be met. Some institutions make no inquiry at all; others obtain very low response rates. Some qualitative information about nonrespondents would be useful to confirm or allay some of the

rampant myths: "There is a massive resistance to surveys'; "Embittered youth will not accommodate the system by answering"; "Only the successful will answer." A postcard follow-up and a telephone inquiry, described below, helped with these questions.

B. *Execution of the Design (Collection)*

The primary source of Comm-Bacc data was the placement office at each institution. These offices vary widely in the amount of data they collect on recent graduates, but a pretest indicated that a sizeable majority collect certain essential characteristics. While the terminology varied from college to college, it was clear that a standardized set of reporting schedules could be completed by these offices if minor adjustments were made and if the clerical assistance was available.

In the first stage, an *information stage,* each placement office received a sample reporting schedule, an explanation of the project, and an invitation to call. This material went out in May 1972 and a letter to the president soliciting cooperation followed. Throughout July, two research assistants *visited* the larger campuses to turn up any procedural problems and keep interest alive. We learned from these visits that many institutions, for all their optimism, don't actually get material back by September. The time schedule was revised on that basis with December 1, 1972 as the closing date for preliminary runs. A full set of *reporting schedules* went out in late August (See Appendix B). A reminder letter with a second set of schedules was mailed in October, along with an offer of on-site assistance with the tabulation by a research assistant and the added offer of a postcard survey if institutions were getting no response from local inquiry. Cooperation from placement offices was excellent. Less than ten institutions gave a refusal in writing; twelve others simply had no means of gathering the kind of information required by Comm-Bacc; only ten gave no reply. By the first of December, sixty-two complete reports were in hand.

As institutions completed the schedules, several reported low response rates or major incompatibilities between their traditional reporting practices and Comm-Bacc requirements. These responses, which were important to the study both intrinsically and for a reliability check, were followed up whenever possible, by obtaining a list of names and addresses to conduct a single wave of postcard mailings. In two cases where complete graduating classes had to be polled, a 25% randomly selected sample was chosen. In six cases of low response, all those who did not answer the institutions' requests received a postcard inquiry. Finally, a small group, 45, who had answered neither the college request nor the postcard were telephoned to gather from them (in some cases from their parents) the basic information.

The distribution by mode of reporting is displayed in Table 1.2; but before turning to its implications it may be helpful to have the results of the telephone inquiry in mind. All of the respondents were cordial and some expressed appreciation that such a study was being made. Only six of the 45 had not received the postcard; procrastination more than resistance or malevolence accounted for the nonreturns. Although nothing in the figures show it, the telephone interviewer reported a strong impression that those who had no job prospects were characterized by a passivity that reached back into their undergraduate years. They had not used guidance or placement sources and had not moved to contact other agencies for assistance. From Table 1.2, certain differences in distribution among the modes of reporting are clear. When the data are collapsed into "schedule" versus "postcard" categories of response, the two are significantly different by the chi-square test at $p = .001$.

The postcard group was contacted in December and January, somewhat later than the original participants; this explains the much lower proportion in the "seeking" category and also the larger share in the "related" employment case. The most important indicator here is that nonresponse is apparently not a mask for unemployment.

On the basis of experience with this single collection effort in its various phases, several observations can be made. Timing is a crucial, perhaps *the* crucial, variable. Collection should be cumulative up to a common date for cutoff of official tabulation. This date should probably be either November 1 or December 1. Gathering data through the cooperative efforts of the placement offices has much to recommend it, but two or three years may be required in order to standardize the schedule. Postcards are not satisfactory unless two follow-ups are made, an expensive and difficult process with the mobile subjects in this population. Telephone interviews have considerable value as a collection device in their own right and they also offer a convenient means of verifying responses.

C. *The Pattern of Response*

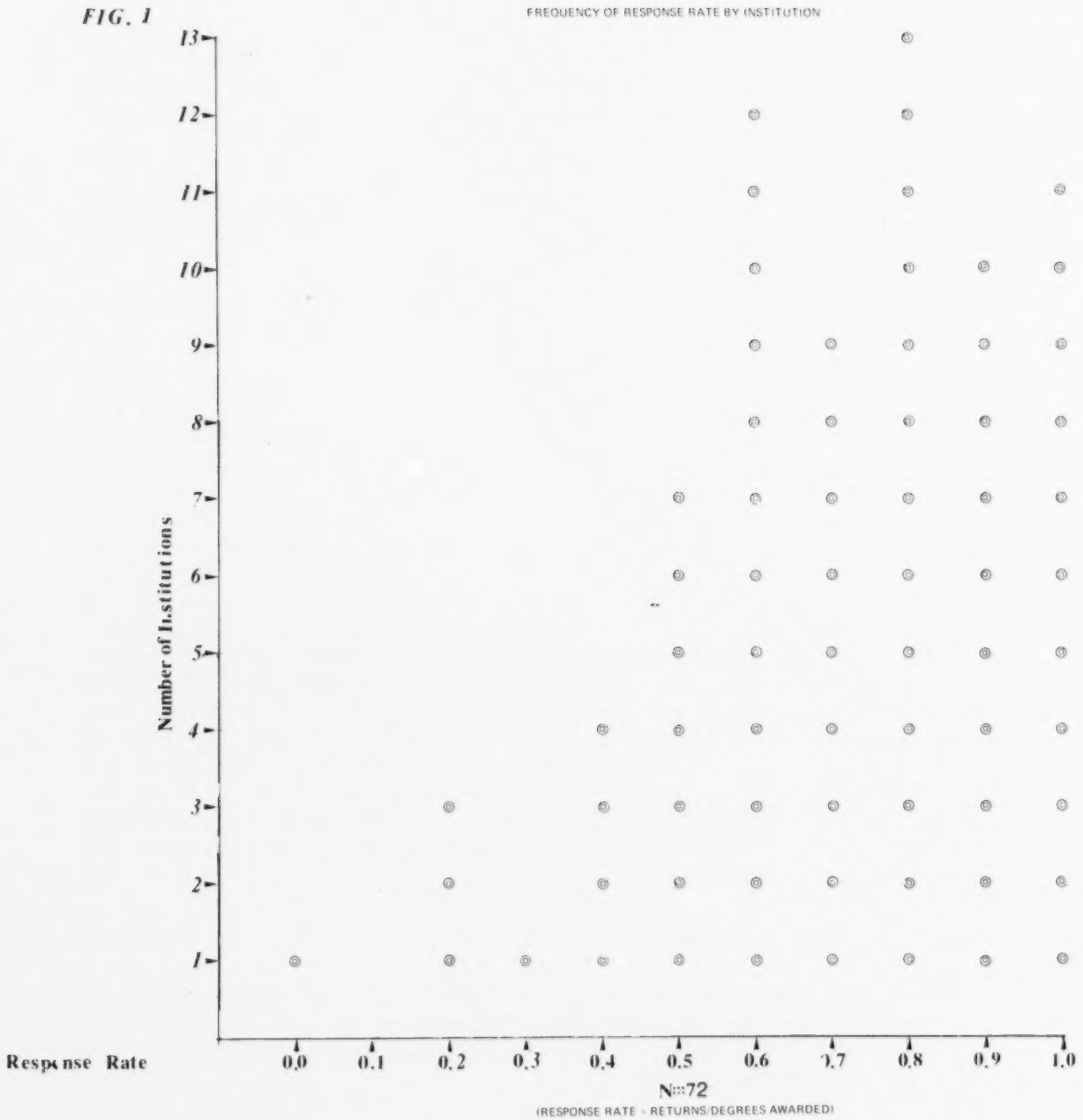
For the Comm-Bacc Study, *the response rate* is defined as that percentage of baccalaureate recipients about whom information has been reported. The mean response rate for the State was .58 as noted in Table 1.1; but, if the 25% random sample for the two institutions is reweighted, the overall rate of response can be adjusted to .60. (A frequency distribution of the response rates by individual institutions is displayed in Figure 1 on the next page.) From the table it is clear that the state-owned institutions, who benefited from their long experience with NEA teacher placement surveys, show the highest rate (.78) of response. Since the larger institutions—the state-related and state-aided—have markedly lower rates, the conclusions of the study as applied to these institutions must be interpreted in terms of their lower response rate. This lower rate is chiefly a matter of size. In addition, correlations between various institutional characteristics and response rates give some evidence that the larger universities are less able to follow up on baccalaureates. Using Pearson's method, the following correlations between response rate and selected indicators were generated. All are significant. Enrollment size: .28; Number of library volumes: .44; Number of full-time faculty: .39; Number of baccalaureates awarded: .30. Of course, many of these larger institutions are also in urban areas where direct transactions between the student and prospective employer by-pass the university placement office. Clearly, any plan for continuing the kind of inquiry attempted in Comm-Bacc must deal first with the problem of reaching graduates of the largest institutions.

D. Basic Definitions for this Study

1. According to the Higher Education General Information Survey (HEGIS) Report, there are 104 institutions in the Commonwealth of Pennsylvania granting baccalaureate degrees. In 1971-72, 52,696 degrees were conferred. This is the *population* for the study.

2. This report includes information provided by seventy-two Commonwealth institutions and covers a contacted subpopulation of 44,243 degree recipients. This is 69.2% of the institutions and approximately 84% of the degree recipients as shown in Table 1.0.

FIG. 1


FREQUENCY OF RESPONSE RATE BY INSTITUTION
Number of Institutions
13
12
11
10
9
8
7
6
5
4
3
2
1
Response Rate
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
N=72
(RESPONSE RATE = RETURNS/DEGREES AWARDED)

3. Of this *contacted subpopulation*, desired information is available for 25,687, designated as the *reported group*. This is 48.8% of the *population* and 58% of the *contact group*. Table 1.1 shows the distribution of these responses by type of institutional control.

4. *Degree fields* follow the standard typology of the HEGIS Reports with only slight modifications. Thus, major fields of study correspond exactly with the degrees reported for those fields by all participating institutions. In some tables these fields of study are fields grouped into *professional* and *nonprofessional* categories, a distinction that is self-evident.

5. *Occupational categories* represent a slight modification of the 1970 Census classification. The occupational distribution for graduates of each degree field was reported in terms of the three-digit detailed census categories for occupations that related closely to the fields of study. A sample page from the reporting schedules is displayed in Appendix B. Those occupations categorized as remote from the field of study were reported in terms of the more general census categories, e.g., 650 = Sales Workers, 675 = Clerical and Kindred Workers. Graduates who were reported as employed in detailed occupations readily identified with their field of preparation are classified as in "related" fields; those who are reported as employed in the more general categories are considered to be in "remote" fields.

6. Unemployed students were reported in graduate school or military service if they engaged in that activity on a full-time basis. Those who are neither participating in the labor force nor attending graduate school are termed "not seeking" employment. While most in this group may be married women, some are graduates who are on long vacations. The "seeking work" category represents those who are usually identified as unemployed. They have expressed an intention, either by act or inference, to enter the labor force and have so far been unsuccessful in locating employment.

7. For those employed, the geographic *location of the job* is identified and reported with respect to the site of the degree-granting institution to show the range of initial migration from that point. One other geographic factor, the *institutional* location is recorded in some of the tables, counties being combined into the "planning regions" designated by the Pennsylvania Department of Education and subsequently joined into Eastern, Central, and Western *sectors* of the State.

8. Institutions have been categorized in several ways for purposes of this report. The basic distinction, *type of control*, is among state-owned, state-related, state-aided, and private institutions, which are further subdivided into small private colleges and church-related colleges. Another set of categories distinguishes the institutions by function. The *kind of institutions* are research universities, small universities, colleges, and specialized schools. The inclusion of certain other basic data about institutions such as the size of enrollment, degree output, tuition level, number of volumes in the library, and number of faculty members has made it possible to relate the employment data to institutional characteristics in a more refined way. This data is reported when it is significant.

9. To indicate the amount of unemployment accurately, only those degree recipients who have made themselves eligible for a job have been identified. An *unemployment ratio* is used showing the number employed. The number is not a percentage but a relative indicator, high ratios signifying high unemployment.

A similar index is used to indicate the relationship of those in jobs related to a field of study to those in jobs remote from the field of study. In this case a high *relatedness ratio* shows a well-defined job market.

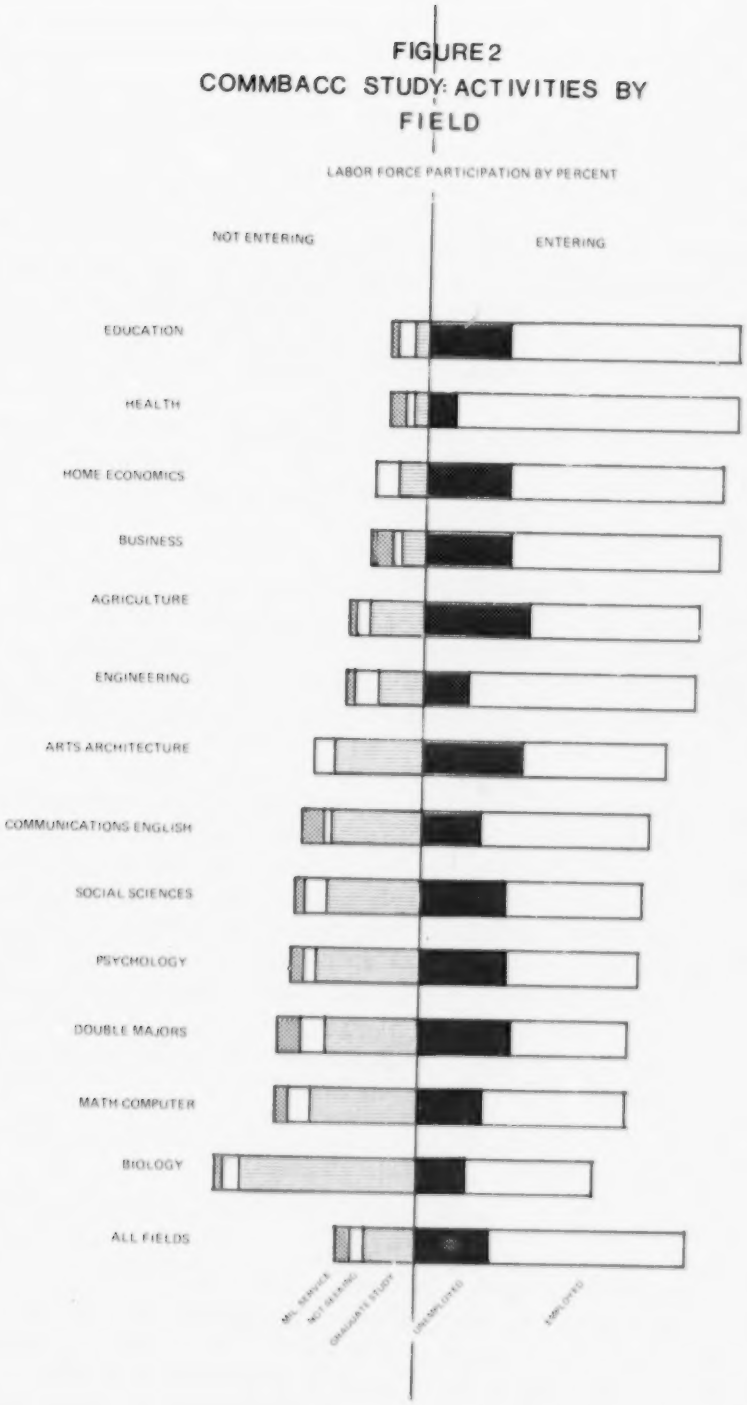
IV. The Findings in Detail

A. Employment

A principal point of interest in a study of this kind is the relationship between employment and unemployment. Even though the time frame is a narrow one extending over only a few months immediately following graduation, the data suggest that a factor of considerable importance exists, i.e. graduates who do not locate employment by commencement day are likely to lose touch with the organized and specialized campus contacts that can be of great help to them. This delay in first employment also points to a marked change in the role of traditional placement offices in the direction of a truly educational function. To acknowledge the importance of this set of conditions, the data on employment and unemployment are described before taking up a more detailed analysis of institutional and geographic variations. The most significant data are displayed in Figure 2 on the next page and Table 2.0. The bars of Figure 2 each represent the distribution by percentages of graduates in various fields over various kinds of postbaccalaureate activities. The table supports the graphic display. By summing the columns labeled "related," "remote," and "seeking" it is clear that 19,985 of the 25,687 reported individuals intend to enter the civilian labor market. This derived total contains 78% of the responding group. Among all the reported graduates only 56.2% had found a job at the time of inquiry, 21.7% were seeking work, and 22.1% had plans other than work. If we consider unemployment only among those who intend to work, then the "seeking" category represents a higher proportion (28%). Whatever the scale of comparison, a substantial share of baccalaureates did not get located in a job before or in the months immediately after graduation.

The distribution of that 56.2% of the reported cases who are employed can be looked at from several points of view: by field of study, by type of institution, or by location of employment. If the degree fields are grouped into two broad classes representing the type of preparation, the *professional*, which includes engineering, education, business and other specialties, and the *nonprofessional*, which includes those holding general degrees in the arts and sciences, degrees number 16,594 and 9,093 respectively (Table 2.1). As shown by a total of "employed" and "seeking," a much larger share of the professionals (14,439 or 87%) *intend* to enter the labor force. *Three-fourths* of them find employment. Among the nonprofessionals, only 5,536 (61%) move toward immediate employment and about two-thirds had been successful at the time of the study. In most cases those in professional fields are clearly pointed toward employment at the baccalaureate level and they are slightly more successful in their search for jobs than their classmates. This distinction is not immediately visible in the tabular data which shows about the same percentage (21-22%) in each group seeking work, but the graph makes the situation plain (Figure 2).

FIGURE 2
COMMBACC STUDY: ACTIVITIES BY FIELD



When the data are examined field by field for the professionals, and this can be done in the basic Table 2.0, considerable variation appears. Health, education, engineering, and business show high percentages employed, while architecture-arts and agriculture are relatively low. Among all the fields of study, the lowest employment percentage (27.6%) is found among the biologists, but this is matched by very high involvement (52.3%) in graduate study. This is so much above all the other fields that it affords some interesting speculation. Undoubtedly many of the premedical students are included here and numerous studies have shown that medical majors decide early and stay with the decision.

When the data on activity are distributed by type of institutional control, as in Table 2.2, state-owned institutions are preparing the largest share of graduates for employment with 66% in the labor force at the time of study and another 23% seeking entry. This means, of course, that graduates of these colleges who are often in general fields of preparation will be among the first to feel any sharp aberrations in the employment market.

Least involved with immediate problems of employment for the whole graduating class of baccalaureates are the private colleges where only 43% joined the labor market and only 18% were seeking jobs. We will find in subsequent pages that these smaller institutions keep in touch with their graduates rather well.

The pattern of employment across the planning regions of the State displays exceptional variations in Susquehanna, Northern, and Northwest where low employment percentages of 43%, 56%, and 54% are combined with high job-seeking percentages of 34%, 30% and 25%, respectively (Table 2.5.0). When data are aggregated into three major geographic sectors, Western and Eastern areas are similar with about 60% employed and 20% seeking work (Table 2.5.1-3).

These data support the general conclusion that entry into the civilian labor market is delayed for many graduates who would like to work. Moreover, it is clear that some fields of study are directed toward entry level jobs that require more education than a baccalaureate provides. It is doubtful whether undergraduates are presented with this reality emphatically enough to shape choices; otherwise a field like "double majors," which clearly has value only if graduate study continues, would not reflect 26.9% looking for employment. Among various classes of institutions it is clear that the emphasis of the state-owned institutions rests heavily on preparation for employment at the baccalaureate level whether in teaching or other occupations. Regional distinctions emphasize the limited nature of the economic structure in the central counties of the State.

B. *Related* and *Remote* Employment

Are employed graduates working at occupations that can be identified as "related" to their field of study or are they in "remote" occupations? This question can be answered in several ways and the most commonly used procedure is to simply ask individuals whether their studies had any bearing on their work. Because there was no direct access to individual respondents in this study, the procedure is quite different. The occupational category of the respondent was identified and that category classed as one related or remote. In most cases this is probably quite satisfactory, except in the general arts field where more detailed examination must be made. The distribution by field is displayed in Table 2.0. More detailed information is found in Tables 4.2 series.

The larger share of all graduates who are employed (75%) secure related work. However, there are extreme differences between the professional and nonprofessional fields (Table 2.1.0). A mere 5.6% of the professionals employed are in remote occupations, while 28.7% of the nonprofessionals are outside the clearly identifiable occupational specialties.

These particular data illustrate the heavy dependence of the engineers, for example, on the selected labor market they serve. Because they have relatively little employment flexibility, any drop in opportunity, however slight, is felt immediately and is likely to have serious consequences. Those few engineers who do move outside the identifiable bounds of the profession enter managerial and technical work (Table 4.2.1). Although business shows an even higher degree of concentration on related work, and education also exhibits a strong focus in the field, each of these has in the past shown somewhat more marked flexibility than engineering (Table 2.0).

Communications-English has the highest scatter with less pronounced effects in psychology and social studies. The overwhelming number of these scattered graduates are employed in high school teaching, a remote category by our system of classification, with the next remote categories (clerical work, administration, and general professional work) far below (Table 4.2.2).

The distribution of social science majors across the occupational spectrum is only slightly different. In related fields, social work and justice draw the largest numbers, mostly in the field of sociology. In remote fields the largest share is in management with high school teaching second and other professional categories close behind (Table 4.2.3). The business world and public administration gain the benefits of the education of these students even though their preparation was general.

To examine the characteristics of relatedness and remoteness in more detail, a ratio of those in remote fields to those in related fields was calculated, with low ratios reflecting more remoteness (Table 4.0). The private colleges display the greatest amount of remoteness due to the inherent flexibility of the liberal arts majors.

There is little evidence in these data to support the notion that a large oversupply of educated persons is imminent. Both engineering and education have high proportions of graduates entering the labor force and finding employment. In the case of education, the occupational field is not only absorbing the declared majors but also substantial numbers of disciplinary majors. One can hypothesize that an excess of teachers will first be felt by liberal arts majors who cannot find entry into this second career choice of high school teaching. This group must be prepared to move with opportunity as they have done when college teaching posts declined.

C. Nonemployed

In the reported group, 11,262 (44%) of the graduates were not active in the civilian labor force (Table 2.0). About half of the group was seeking employment; the activities of the others can be described in some detail.

1. Not Seeking

One of the striking features of the study is the small number of baccalaureates who had removed themselves from labor market participation, only 937 individuals or 3.6% of the total. This means that women graduates, not separately identified in this study, who constitute about 43% of the baccalaureate recipients in Pennsylvania, are undertaking active roles in either employment or graduate study. This low level of nonparticipation varied somewhat by field, but even in the disciplines which usually contain a large proportion of women (communication, home economics, and double majors), the share identified as "not seeking" runs only about 6%. Regional differences were insignificant. When type of institution was considered, the large universities showed about twice the average level of nonparticipation (7.3%) (Table 2.3).

Of all the predictions current in the folk wisdom—dire conditions for engineers and teachers; great days for computer and math majors—only one, the much higher participation of women, is borne out by the data in this study.

2. Graduate Study

Graduate study as a full-time activity—that distinction is important—engaged 14.9% of the respondents; but that general figure obscures a number of radical variations (Table 2.0). Those in nonprofessional programs entered graduate study in twice the proportion of the professionals (Table 6.2.1). Field by field, there are strong differences in the percentages entering full-time graduate study. Biology is well above all others with 52.3% engaged in advanced work. That this is partly due to medical school admissions is confirmed by a very high percentage (67%) of the biologists in the Eastern region of the State reporting graduate study (Table 2.5.1). The math-computer (31%) majors and the psychologists (30%) are high, but so is the percentage of art-architecture graduates (25%) who enter graduate work.

When institutions are classified by type of control (Table 2.1.1-5), the origin of most of these graduate students is quite clear. As they always have, the private liberal arts colleges show twice the mean level of graduate school participants (31%); and, taken together, the small colleges send 2,512 of the 3,831 in this study who were full-time graduate students. Differences related to size of institution simply confirm this indication (Table 2.4). Regional differences are not particularly strong except that the Western region is somewhat below the mean percentage for graduate involvement (Table 2.5.1-3).

3. Military Service

Whatever the effects of the military effort might once have been, they are small now with only 3.6% of the Comm-Bacc group involved in full-time active duty. Professional and nonprofessional categories are similar, but a more detailed subdivision shows higher participation for double majors (7%), engineering (6.9%), and business (6.4%). Middle-size schools (1,500-2,000) are most likely to have ROTC programs and show the greatest share of participants. In view of the traditional support for military programs by public institutions, it is somewhat surprising to find that the private institutions in Pennsylvania have the greatest participation (6%).

4. Seeking Employment

We have already noted that the proportion of graduates seeking employment in the period right after graduation was high, about 22% of the total reported. In professional fields, it was slightly higher than that percentage; in nonprofessional, slightly lower. Clearly, specialization by itself is not an assurance of employment. A more accurate assessment of the condition of unemployment can be made by relating in a ratio the category of unemployed and seeking with the category of employed. If the ratio is high, unemployment is high. The basic ratios by field, displayed in Table 3.0, show the mean to be .385. Small distinctions are difficult to interpret, so it is useful to group the individual values into zones which show low, medium, and high employment as displayed in Table 3.1. When data for institutions under various types of control are compared to the mean of .385, we find the state-related institutions showing a high ratio of unemployed graduates (.729), the private colleges and state-owned institutions just about on the mean, and the church-related colleges low at .284 (Table 3.1.1-5).

Regional variations are significant and the Central sector shows higher unemployment in just about every field (Table 3.3). The levels of those ratios are also much above the other geographic sectors reflecting exceptionally slow employment.

It would be helpful if these ratios could be used without interpretation to establish which fields are overcrowded and which reflect shortages. To a limited degree that can be done, but there is another factor at work. The educational preparation for entry into various occupational or professional fields may differ widely. In psychology, mathematics, the social sciences, and the humanities, entry level is well above the baccalaureate. The title or label of "psychologist" is almost never accorded anyone trained below the master's level. To counter this condition, baccalaureates from those fields who seek employment must have the flexibility to respond to opportunities in other job constellations and at other places. The Communications-English group displays some of this flexibility and it will undoubtedly become more widespread.

D. Geographic Factors

The spatial distribution of Pennsylvania baccalaureates is interesting because it shows such a large share (72%) of the class of 1972 employed in the State (Table 5.0). Considering the nature of the market areas around Philadelphia, Pittsburgh, and Erie, it is surprising to find only 17.5% of Comm-Bacc graduates in adjacent states. The job market phenomenon appears to be far more localized than national data and older migration studies have indicated. There is some variation among fields with the Home Economists being the greatest travelers. Teachers show least mobility with 80% of them remaining in the State, although they are not particularly bound to the county in which they studied. Engineers, communications majors, and agriculturalists move in significant numbers. Although there is always a good deal of concern about the departure of health specialists from the regions in which they train, at the baccalaureate level, Comm-Bacc found that they have stayed in the Commonwealth in the proportion of 76.2%. In a quite literal way, Pennsylvania reaps in educational benefits what it sows in support for institutions (Table 5.2). Eighty-two percent of graduates from the state-owned institutions, 71% from state-related, 61% from state-aided,

and 58% from private institutions stay in Pennsylvania. Any notion that the Commonwealth is supporting neighboring states by its system of higher education is dispelled by these data.

Another geographic aspect shown by Table 5.1 and the map, Figure 3 on the next page, which might be characterized as *the degree of localism* in the employment market for baccalaureates, is the degree to which graduates are employed in the immediate vicinity of their college. Turnpike region graduates, who constitute the largest out-of-state contingent and the largest overseas group, show the lowest *degree of localism*, while the Northern, Capitol, and Southwest regions show the greatest degree of localism.

Using the major sectors of the State, several intercorrelations were made around the variables dealing with employment and with "remoteness" for all respondents. The rate of unemployment was significantly higher in the Central sector than in either the Eastern or Western sector. When the regions were compared on the attribute of remoteness (the proportion of those employed who were working in fields distant to their preparation), the Western sector had a significantly higher proportion than the other two.

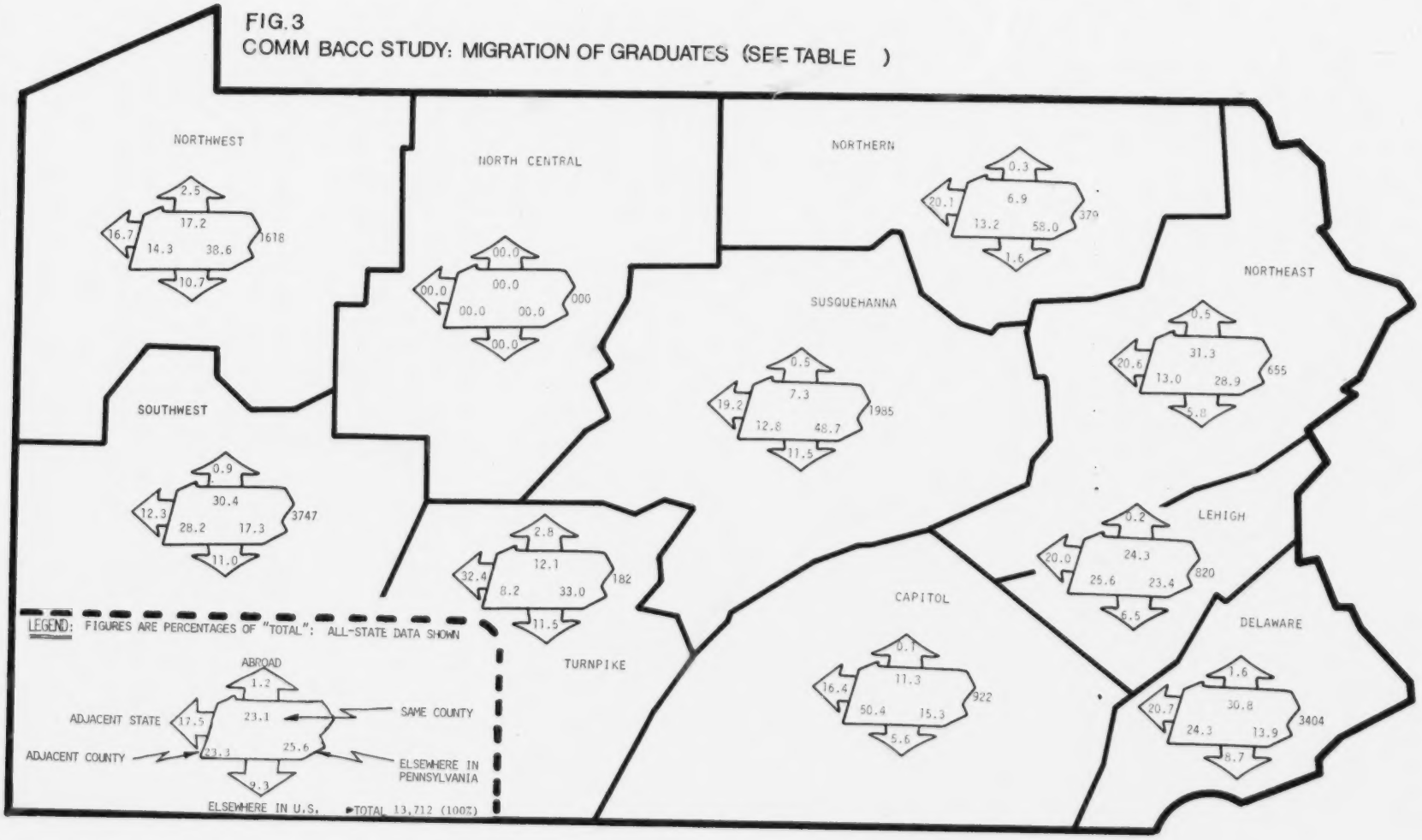
If the short-run market for college graduates is indeed the highly localized phenomenon that appears in these data, then a study of the market and knowledge of its changes over a relatively small area, the State of Standard Metropolitan Statistical Area (SMSA), for example, is an indispensible component of both counseling and planning in collegiate institutions. This kind of information cannot be translated from the usual business census data nor can it be disaggregated from national studies. Educational manpower information has its own characteristics and they are substantially different from simple estimates of the number of jobs in conventional categories for time horizons five or ten years away. Such forecasting has its uses, particularly in distinct vocational fields where school trained people enter the job slots on a one-to-one basis; baccalaureate level graduates face a much more variable market and planning their four-year programs requires more sophisticated information.

E. Other Relatedness

The characteristics examined in this study—employment ratios, relatedness and remoteness, graduate study, nonparticipation in the labor force—lend themselves to further examination. By means of intercorrelations and factor analysis they were related to a set of widely used institutional characteristics including the number of degree fields, overall enrollment, proportion of faculty with doctorates, volumes in library, type of control. The dominant factor was, of course, the complex of items related to institutional size. No other cluster emerged from the data.

Several individual correlations of interest appeared. Larger enrollments were correlated with higher proportions of nonparticipation in the labor force, i.e., for the category "not seeking employment," $r = .73$. To some degree higher rates of employment were correlated with a lower proportion of doctorates on the faculty ($r = -.37$), a reflection, no doubt, of the special focus of the small collegiate institution on its students and their immediate goals. Higher employment ratios were also correlated negatively with tuition levels ($r = -.41$), but any speculation on this condition would require more detailed information about both characteristics. Taken overall, the frequency distributions in the tables describe completely the main parameters of the study.

FIG.3
COMM BACC STUDY: MIGRATION OF GRADUATES (SEE TABLE)



F. A Study Related to Comm-Bacc

A research study related to the Comm-Bacc project was undertaken by Steven Millman and completed as a doctoral dissertation entitled, "Career Approximation in First Employment of College Graduates as a Function of Behavioral Components of Vocational Maturity." Using the theoretical notions developed by Super around the vocational maturity concept, an interview schedule was designed. Telephone contact with 236 individuals drawn from graduates of state-owned institutions was made. Millman found that subjects felt they possessed a substantial amount of information about their career areas prior to graduation. On closer examination, most of the information turned out to be derived from casual sources, and obtained late in their training. Career counselors and faculty were little used and not highly regarded. This study reinforces the impressions left by the Comm-Bacc data, that career counseling faces a task as difficult as it is urgent.

V. Detailed Recommendations and Policy Considerations

A. Collect Data on First Activities after Graduation Systematically

Systematic collection of data on the first activities after graduation for baccalaureate recipients is both feasible and useful and should be continued. To have the greatest usefulness for college and university authorities, the data should be tabulated and published in February or March of the year following graduation. Several alternatives might be followed in collecting this information:

1. *Summarize Information Collected by Placement Offices.* This amounts to a continuation and refinement of the format used for the Comm-Bacc Study. It will, of course, carry both its benefits and limitations. The benefits of this Comm-Bacc method lie in economy, and in the familiarity of placement officers with the general format of the study. The chief limitations of the Comm-Bacc method arise from the impossibility of identifying individual career tracks of students and from the variability of practices among placement offices which restrict accuracy and completeness. These could be improved somewhat, but would always be subject to changes in personnel at individual institutions.

2. *Individual Follow-up.* Gathering information from individual respondents would increase the precision of the data collected and would make it possible to connect various aspects of individual choice into a meaningful pattern. The Comm-Bacc, for example, can identify how many students in engineering went outstate but cannot identify each of those individuals. Two approaches to the individual follow-up are possible, along with a number of variations on each one.

   (a) A complete follow-up through the placement offices could be made. The State Department of Education might provide to the placement officers prepunched cards carrying return postage to Harrisburg. The placement officers, as part of their regular follow-up mailing, would enclose the reply card which the student would fill out and mail to the State office. In Harrisburg, they could be tabulated and aggregated with separate results returned to each institution. The prepunched cards would have blank

columns and allow for some optional questions by each of the institutions, thereby providing both flexibility and centralized returns. This could, of course, be done in only one wave and the questions on the cards would have to be very simple. The central notion here is the prepunched card which could contain information identifying the institution, the field of study, and any other information required for central processing. It would not be necessary to return the cards directly to Harrisburg. They could be returned to local placement offices. In this case it would be possible to make several follow-ups from the institution with the final returns sent to Harrisburg.

(b) A follow-up sample could be constructed. Using information about enrollments, proportions of degree candidates, and types of institutions, a structured, proportional sample could be designed. Each institution would be requested to provide a number of names and addresses selected in accordance with the sample design. These names and addresses would form the basis for communications directly to the individual from the State Department of Education, or its representative. The survey instrument would be centrally designed and could collect much more information than would be possible in the more general scheme. Numerous follow-ups could be made to track down respondents. Periodic summaries of returns on the sample group could be sent to individual institutions and periodic reports of the survey's progress could be sent out during the fall and early winter.

3. *A Longitudinal Study.* To gain a maximum of information about the whole process of career decision and entry, a sample cohort could be constructed and followed over several years by a succession of survey instruments. This suggests duplication on a state level of the kind of survey undertaken by the American Council on Education in 1966 and continued through the present year. Such a procedure offers high flexibility in the kinds of questions that can be asked and high reliability to the statistical summaries. It would offer better control because all the planning and execution would be carried out through the Department of Education under a special research project which could be continued over a number of years.

B. Refine NEA Teacher Survey Information

Any new scheme for gathering information should include within its format the information required for the NEA Teacher Survey. Years of experience with this questionnaire have alerted the state-owned colleges to the importance of first employment data, but the survey instrument itself is too general to be of much use. The same questions could be redesigned to fit the comprehensive survey proposed for the Commonwealth.

C. Disseminate Accurate Career Development Information

The dissemination of accurate career development information and placement information for arts and science majors as well as vocational trainees is of increasing importance. Several points in this study emphasize a growing need for comprehensive study and publication of such material. The appearance of a delayed placement in which the student does not

find employment until well after graduation means that he is very likely to lose contact with college placement authorities. This suggests that much of the placement function must be in the form of educating the student before he leaves in job-seeking strategies and information about the market. The flexibility required of students in the liberal arts programs as traditional occupational patterns change requires accurate information. Because of these changing characteristics of the placement process, the State should undertake a series of specialized cooperative research studies on: (1) *Employment areas of statewide significance*, such as the employment patterns of liberal arts graduates; (2) *Emergent areas of employment*, such as studies of environmental jobs or allied health professions; (3) *Specialized curricular patterns* to meet specific conditions, such as the retraining of workers and modification of programs in fields that are declining; (4) *Experimental curricular designs* that will give flexibility to JCC transfers, course switchers, and late deciders.

D. Study Statewide Manpower Conditions with Educational Significance

There is also a need for study and analysis of information about statewide manpower conditions that have special educational significance. Most manpower studies are business-user oriented. Education requires a different kind of labor force information to guide its decisions, actions, and commitments. Such questions as the minimum education required for entry level in various professions, the value of retraining in job relocation, and the optimum relationship between college preparation and on-the-job orientation require an unusual mixture of academic and practical analysis.

E. Design Flexible Undergraduate Educational Programs

Educational programs at the undergraduate level, particularly new plans for study, should incorporate enough flexibility to accommodate the changing occupational structure, the range of individual choice, and the mobility of the employment market. At the college level, narrow specialized training where it is absolutely necessary should rest upon as broad a base of competence as possible. Students need to be encouraged into a broader view of career interests to combat the "progressive conformity" of normal college experience; faculty need more information to avoid creating programs that have detrimental outcomes. From the existing knowledge of career-development patterns among undergraduates and from new information about job characteristics of new baccalaureates, the State Department of Education could develop a series of model curricula. Obviously this could not be done independently of institutions or practioners, but special curriculum study groups on an *ad hoc* basis could be established to construct feasible models for undergraduate programs that have intended outcomes in the occupational-professional sphere.

Appendix A: Tables

TABLE 1.0

COMM-BACC STUDY: POPULATION, CONTACTED SUBPOPULATION, REPORTED, AND NONREPORTED GROUPS

IN PENNSYLVANIA		COMM–BACC CONTACTED SUBPOPULATION			
INSTITUTIONS	BACC	INSTITUTIONS COVERED	BACCALAUREATES COVERED		
104	52,696	TOTAL–72 %–69.2	TOTAL–44,243 %–84.0		
			REPORTED		NOT REPORTED
			TOTAL	25,687	18,556
			% OF CONTACT GROUP	58.1	41.9
			% OF POPULATION	48.8	35.2

TABLE 1.1

RESPONSE RATE: BY TYPE OF INSTITUTIONAL CONTROL

TYPE OF INSTITUTIONAL CONTROL	REPORTED	DEGREES AWARDED	RESPONSE RATE
STATE-OWNED	8983	11,438	.78
STATE-RELATED	4788	13,100	.36
STATE-AIDED	1485	3527	.42
PRIVATE	4003	6342	.63
CHURCH-RELATED	6428	9836	.65
TOTAL	25,687	44,243	.58

TABLE 1.2

RESPONSE RATE: BY MODE OF REPORTING

(% OF REPORTED)

	EMPLOYED		NOT EMPLOYED				
MODE OF REPORTING	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED
SCHEDULE ONLY (62)*	9816 (45.2)	2982 (13.7)	797 (3.7)	3224 (14.8)	5104 (23.5)	813 (3.7)	21,736
POSTCARD ONLY (2)	56 (36.6)	27 (17.7)	8 (5.2)	42 (27.5)	16 (10.5)	4 (2.6)	153
SCHEDULE AND POSTCARD (6)	822 (36.7)	374 (16.7)	102 (4.6)	446 (19.9)	385 (17.2)	109 (4.9)	2238
POSTCARD AND TELEPHONE (1)	133 (62.1)	31 (14.5)	4 (1.9)	11 (5.1)	31 (14.5)	4 (1.9)	214
SCHEDULE, POSTCARD, TELEPHONE (1)	62 (17.9)	122 (35.3)	23 (6.7)	108 (31.2)	24 (6.9)	7 (2.0)	346
TOTAL (72)	10,889 (42.4)	3536 (13.8)	934 (3.6)	3831 (14.9)	5560 (21.7)	937 (3.7)	25,687

*NUMBER OF INSTITUTIONS

TABLE 2.0

COMM-BACC STUDY: TYPE OF ACTIVITY BY FIELD OF DEGREE

(% OF REPORTED)

DEGREE FIELDS	EMPLOYED		NOT EMPLOYED				REPORTED
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	
AGRICULTURE	119 (37.6)	33 (10.5)	12 (3.8)	55 (17.4)	96 (30.4)	1 (0.3)	316
ARCHITECTURE, FINE ARTS	73 (17.5)	100 (24.0)	2 (0.5)	106 (25.4)	118 (28.3)	18 (4.3)	417
BIOLOGY	135 (12.6)	161 (15.0)	42 (3.9)	560 (52.3)	148 (13.8)	25 (2.4)	1071
BUSINESS	1838 (56.8)	111 (3.4)	208 (6.4)	243 (7.5)	786 (24.3)	51 (1.6)	3237
COMMUNICATIONS, ENGLISH LANGUAGES, LIBRARY SCIENCE	141 (7.4)	788 (41.3)	39 (2.0)	493 (25.9)	332 (17.4)	115 (6.0)	1908
EDUCATION	6289 (60.4)	614 (5.9)	178 (1.7)	449 (4.3)	2424 (23.3)	457 (4.4)	10,411
ENGINEERING	1024 (60.8)	79 (4.7)	116 (6.9)	217 (12.9)	213 (12.3)	33 (2.0)	1682
HEALTH	358 (75.7)	28 (5.9)	18 (3.8)	20 (4.3)	36 (7.6)	13 (2.7)	473
HOME EC	196 (46.5)	60 (14.3)	4 (0.9)	34 (8.0)	102 (24.3)	25 (5.9)	421
MATH, COMPUTER, PHYSICAL SCIENCES	355 (22.2)	307 (19.2)	92 (5.8)	498 (31.2)	270 (18.2)	55 (3.4)	1597
PSYCHOLOGY	81 (7.9)	309 (30.4)	40 (3.9)	301 (29.7)	249 (24.5)	37 (3.6)	1017
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	261 (8.8)	904 (30.6)	170 (5.8)	805 (27.3)	716 (24.3)	95 (3.2)	2951
DOUBLE MAJORS	19 (10.2)	42 (22.6)	13 (7.0)	50 (26.9)	50 (26.9)	12 (6.4)	186
TOTAL	10,889 (42.4)	3536 (13.8)	934 (3.6)	3831 (14.9)	5560 (21.7)	937 (3.6)	25,687

TABLE 2.1

TYPE OF ACTIVITY BY KIND OF DEGREE PROGRAM:
PROFESSIONAL AND NONPROFESSIONAL

(% OF REPORTED)

	EMPLOYED		NOT EMPLOYED				
DEGREE	RELATED	REM	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED
PROFESSIONAL	9844 (59.3)	930 (5.6)	537 (3.2)	1026 (6.2)	3675 (22.2)	582 (3.5)	16,594
NONPROFESSIONAL	1045 (11.5)	2606 (28.7)	397 (4.4)	2805 (30.9)	1885 (20.7)	355 (3.9)	9093
TOTAL	10,889 (42.4)	3536 (13.8)	934 (3.6)	3831 (14.9)	5560 (21.7)	937 (3.7)	25,687

TABLE 2.1.1

TYPE OF ACTIVITY BY KIND OF DEGREE PROGRAM:
STATE-OWNED INSTITUTIONS

(% OF REPORTED)

DEGREE	EMPLOYED		NOT EMPLOYED				REPORTED
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	
PROFESSIONAL	4842 (63.4)	477 (6.2)	152 (2.0)	298 (3.9)	1689 (22.1)	186 (2.4)	7644
NONPROFESSIONAL	191 (14.3)	463 (34.6)	67 (5.0)	238 (17.8)	340 (25.4)	40 (3.0)	1339
TOTAL	5033 (56.0)	940 (10.5)	219 (2.4)	536 (6.0)	2029 (22.6)	226 (2.5)	8983

TABLE 2.1.2

TYPE OF ACTIVITY BY KIND OF DEGREE PROGRAM:
STATE-RELATED INSTITUTIONS

(% OF REPORTED)

DEGREE	EMPLOYED		NOT EMPLOYED				
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED
PROFESSIONAL	1707 (47.0)	134 (3.7)	105 (2.9)	249 (6.9)	1152 (31.7)	290 (8.0)	3635
NONPROFESSIONAL	247 (21.5)	106 (9.2)	43 (3.7)	255 (22.2)	448 (38.9)	52 (4.5)	1151
TOTAL	1954 (40.8)	240 (5.0)	148 (3.1)	504 (10.5)	1600 (33.4)	342 (7.2)	4788

TABLE 2.1.3

TYPE OF ACTIVITY BY KIND OF DEGREE PROGRAM:
STATE-AIDED INSTITUTIONS

(% OF REPORTED)

	EMPLOYED		NOT EMPLOYED				
DEGREE	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED
PROFESSIONAL	791 (70.7)	50 (4.5)	31 (2.8)	128 (11.4)	99 (8.9)	20 (1.8)	1119
NONPROFESSIONAL	45 (12.3)	52 (14.2)	5 (1.4)	151 (41.3)	98 (26.8)	15 (4.1)	366
TOTAL	836 (56.3)	102 (6.9)	36 (2.4)	279 (18.8)	197 (13.3)	35 (2.4)	1485

TABLE 2.1.4
TYPE OF ACTIVITY BY KIND OF DEGREE PROGRAM:
PRIVATE INSTITUTIONS

(% OF REPORTED)

DEGREE	EMPLOYED		NOT EMPLOYED				
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED
PROFESSIONAL	616 (49.6)	79 (6.4)	103 (8.3)	144 (11.6)	279 (22.5)	21 (1.7)	1242
NONPROFESSIONAL	215 (7.8)	810 (29.3)	139 (5.0)	1113 (40.3)	431 (15.6)	53 (1.9)	2761
TOTAL	831 (20.8)	889 (22.2)	242 (6.0)	1257 (31.4)	710 (17.7)	74 (1.9)	4003

TABLE 2.1.5

TYPE OF ACTIVITY BY KIND OF DEGREE PROGRAM:
CHURCH-RELATED INSTITUTIONS

(% OF REPORTED)

	EMPLOYED		NOT EMPLOYED				
DEGREE	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED
PROFESSIONAL	1888 (64.0)	190 (6.4)	146 (5.0)	207 (7.0)	456 (15.5)	65 (2.2)	2952
NONPROFESSIONAL	347 (10.0)	1175 (33.8)	143 (4.1)	1048 (30.2)	568 (16.3)	195 (5.6)	3476
TOTAL	2235 (34.8)	1365 (21.2)	289 (4.5)	1255 (19.5)	1024 (15.9)	260 (4.1)	6428

TABLE 2.2

TYPE OF ACTIVITY BY INSTITUTIONAL CONTROL

(% OF REPORTED)

TYPE OF INSTITUTIONAL CONTROL		EMPLOYED		NOT EMPLOYED				
		RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED
STATE-OWNED	(12)*	5033 (56.0)	940 (10.5)	219 (2.4)	536 (6.0)	2029 (22.6)	226 (2.5)	8983
STATE-RELATED	(4)	1954 (40.8)	240 (5)	148 (3.1)	504 (10.5)	1600 (33.4)	342 (7.2)	4788
STATE-AIDED	(5)	836 (56.3)	102 (6.8)	36 (2.4)	279 (18.8)	197 (13.3)	35 (2.4)	1485
PRIVATE	(17)	831 (20.8)	889 (22.1)	242 (6.1)	1257 (31.4)	710 (17.7)	74 (1.9)	4003
CHURCH-RELATED	(34)	2235 (34.8)	1365 (21.2)	289 (4.5)	1255 (19.5)	1024 (15.9)	260 (4.1)	6428
TOTAL	(72)	10,889 (42.4)	3536 (13.8)	934 (3.6)	3831 (14.9)	5560 (21.7)	937 (3.6)	25,687

*NUMBER OF INSTITUTIONS

TABLE 2.3

TYPE OF ACTIVITY BY KIND OF INSTITUTION:
RESEARCH UNIVERSITY, SMALL UNIVERSITY, COLLEGE, SPECIALIZED

(% OF REPORTED)

	EMPLOYED		NOT EMPLOYED				
KIND OF INSTITUTION	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED
RESEARCH UNIVERSITY	2398 (40.8)	327 (5.6)	180 (3.0)	811 (13.8)	1793 (30.5)	369 (6.3)	5878
SMALL UNIVERSITY	1708 (45.0)	569 (15.0)	165 (4.4)	680 (17.9)	542 (14.3)	128 (3.4)	3792
COLLEGE	6698 (42.2)	2608 (16.5)	586 (3.7)	2321 (14.6)	3208 (20.2)	440 (2.8)	15,861
SPECIALIZED	85 (54.5)	32 (20.5)	3 (1.9)	19 (12.2)	17 (10.9)	0 (0)	156
TOTAL	10,889 (42.4)	3536 (13.8)	934 (3.6)	3831 (14.9)	5560 (21.7)	937 (3.6)	25,687

TABLE 2.4

TYPE OF ACTIVITY BY SIZE OF ENROLLMENT

(% OF REPORTED)

	EMPLOYED		NOT EMPLOYED				
ENROLLMENT SIZE	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED
500 AND BELOW	76 (32.4)	123 (52.3)	1 (0.4)	16 (6.8)	16 (6.8)	3 (1.3)	235
501 TO 1000	643 (33.4)	615 (31.9)	23 (0.1)	415 (21.6)	149 (7.7)	83 (4.3)	1928
1001 TO 1500	838 (32.0)	596 (22.8)	69 (2.6)	701 (26.8)	372 (14.2)	42 (1.6)	2618
1501 TO 2000	745 (26.3)	640 (22.6)	241 (8.5)	744 (26.3)	398 (14.1)	61 (2.2)	2829
2001 TO 4000	2620 (45.6)	561 (9.8)	210 (3.7)	691 (12.0)	1447 (25.2)	210 (3.7)	5739
4001 TO 10,000	4029 (53.0)	772 (10.2)	244 (3.2)	771 (10.2)	1584 (20.8)	197 (2.6)	7597
ABOVE 10,000	1938 (40.9)	229 (4.8)	146 (3.1)	493 (10.4)	1594 (33.6)	341 (7.2)	4741
TOTAL	10,889 (42.4)	3536 (13.8)	934 (3.6)	3831 (14.9)	5560 (21.7)	937 (3.6)	25,687

TABLE 2.5

TYPE OF ACTIVITY BY PLANNING REGION

(% OF REPORTED)

REGION	EMPLOYED		NOT EMPLOYED				
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED
DELAWARE	2605 (40.3)	1058 (16.3)	242 (3.8)	1154 (17.9)	1149 (17.8)	248 (3.9)	6456
LEHIGH	548 (34.8)	379 (24.1)	59 (3.8)	323 (20.5)	237 (15.1)	26 (1.7)	1572
NORTHEAST	525 (41.9)	159 (12.7)	25 (2.0)	199 (15.9)	305 (24.4)	39 (3.1)	1252
NORTHERN	338 (48.1)	53 (7.6)	19 (2.7)	47 (6.7)	209 (29.8)	36 (5.1)	702
SUSQUEHANNA	1723 (36.7)	315 (6.7)	197 (4.2)	679 (14.5)	1608 (34.2)	176 (3.7)	4698
CAPITOL	615 (38.4)	390 (24.3)	58 (3.6)	318 (19.8)	189 (11.8)	34 (2.1)	1604
TURNPIKE	103 (37.3)	79 (28.6)	9 (3.3)	65 (23.5)	20 (7.3)	0 (0)	276
NORTHCENTRAL	0	0	0	0	0	0	0
NORTHWEST	1294 (43.1)	331 (11.0)	150 (5.0)	416 (13.9)	746 (24.8)	65 (2.2)	3002
SOUTHWEST	3138 (51.2)	772 (12.6)	175 (2.9)	630 (10.3)	1097 (17.9)	313 (5.1)	6125
TOTAL	10,889 (42.4)	3536 (13.8)	934 (3.6)	3831 (14.9)	5560 (21.7)	937 (3.6)	25,687

TABLE 2.5.1
TYPE OF ACTIVITY BY FIELD OF DEGREE: EASTERN SECTOR

(% OF REPORTED)

EASTERN REGION

DEGREE FIELDS	EMPLOYED		NOT EMPLOYED				REPORTED
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	
AGRICULTURE	67 (62.6)	24 (22.4)	2 (1.9)	8 (7.5)	6 (5.6)	0 (0)	107
ARCHITECTURE, FINE ARTS	24 (18.6)	51 (39.5)	0 (0)	33 (25.6)	11 (8.5)	10 (7.8)	129
BIOLOGY	37 (9.1)	50 (12.3)	4 (1.0)	271 (66.9)	29 (7.2)	14 (3.5)	405
BUSINESS	805 (59.6)	31 (2.3)	76 (5.6)	118 (8.8)	298 (22.1)	22 (1.6)	1350
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	64 (7.5)	448 (52.3)	21 (2.5)	226 (26.4)	130 (15.2)	69 (8.1)	858
EDUCATION	2163 (60.0)	248 (6.9)	65 (1.8)	168 (4.7)	847 (23.5)	110 (3.1)	3601
ENGINEERING	327 (59.2)	39 (7.1)	52 (9.4)	95 (17.2)	38 (6.9)	1 (0.2)	552
HEALTH	136 (81.4)	2 (1.2)	7 (4.2)	7 (4.2)	10 (6.0)	5 (3.0)	167
HOME EC	115 (61.5)	19 (10.1)	2 (1.0)	13 (7.0)	25 (13.4)	13 (7.0)	187
MATH, COMPUTER, PHYSICAL SCIENCES	123 (20.3)	104 (17.2)	24 (3.9)	192 (31.7)	50 (8.3)	22 (3.6)	605
PSYCHOLOGY	46 (9.6)	149 (31.0)	14 (2.9)	153 (31.8)	96 (20.0)	23 (4.7)	481
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	102 (7.0)	472 (32.2)	71 (4.8)	417 (28.5)	349 (23.8)	54 (3.7)	1465
DOUBLE MAJORS	7 (10.8)	12 (18.5)	7 (10.8)	22 (33.8)	11 (16.9)	6 (9.2)	65
TOTAL	4016 (41.5)	1649 (17.0)	345 (3.5)	1723 (17.8)	1900 (19.6)	349 (3.6)	9682

TABLE 2.5.2

TYPE OF ACTIVITY BY FIELD OF DEGREE: CENTRAL SECTOR

(% OF REPORTED)

CENTRAL REGION

DEGREE FIELDS	EMPLOYED		NOT EMPLOYED				REPORTED
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	
AGRICULTURE	52 (24.9)	9 (4.3)	10 (4.8)	47 (22.5)	90 (43.0)	1 (0.5)	209
ARCHITECTURE, FINE ARTS	14 (11.9)	13 (11.0)	2 (1.7)	25 (21.2)	56 (47.4)	8 (6.8)	118
BIOLOGY	25 (8.5)	27 (9.1)	14 (4.7)	145 (49.2)	76 (25.8)	8 (2.7)	295
BUSINESS	312 (40.8)	29 (3.8)	57 (7.5)	54 (7.0)	297 (38.8)	16 (2.1)	765
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	25 (6.5)	97 (25.0)	10 (2.6)	129 (33.3)	108 (27.9)	18 (4.7)	387
EDUCATION	1527 (58.7)	236 (9.1)	62 (2.4)	132 (5.1)	570 (21.9)	74 (2.8)	2601
ENGINEERING	191 (39.8)	26 (5.4)	33 (6.9)	66 (13.7)	135 (28.1)	29 (6.1)	480
HEALTH	43 (51.9)	1 (1.2)	6 (7.2)	7 (8.4)	20 (24.1)	6 (7.2)	83
HOME EC	26 (19.7)	20 (15.1)	1 (0.8)	12 (9.1)	66 (50.0)	7 (5.3)	132
MATH, COMPUTER, PHYSICAL SCIENCES	51 (13.1)	50 (12.8)	28 (7.2)	125 (3.8)	123 (31.5)	14 (3.6)	391
PSYCHOLOGY	9 (5.5)	34 (20.7)	7 (4.3)	64 (39.0)	45 (27.4)	5 (3.1)	164
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	58 (9.5)	157 (25.7)	21 (3.4)	175 (28.7)	181 (29.7)	18 (3.0)	610
DOUBLE MAJORS	5 (7.5)	6 (8.9)	4 (6.0)	16 (23.9)	30 (44.8)	6 (8.9)	67
TOTAL	2338 (37.1)	705 (11.2)	255 (4.1)	997 (15.8)	1797 (28.5)	210 (0.3)	6302

TABLE 2.5.3

TYPE OF ACTIVITY BY FIELD OF DEGREE: WESTERN SECTOR

(% OF REPORTED)

WESTERN REGION

DEGREE FIELDS	EMPLOYED		NOT EMPLOYED				REPORTED
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	
AGRICULTURE	0	0	0	0	0	0	0
ARCHITECTURE, FINE ARTS	35 (20.6)	36 (21.1)	0 (0)	48 (28.3)	51 (30.0)	0 (0)	170
BIOLOGY	73 (19.7)	84 (22.6)	24 (6.5)	144 (38.8)	43 (11.6)	3 (0.8)	371
BUSINESS	721 (64.3)	51 (4.5)	75 (6.7)	71 (6.3)	191 (17.0)	13 (1.2)	1122
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	52 (9.2)	243 (43.2)	8 (1.4)	138 (24.5)	94 (16.7)	28 (5.0)	563
EDUCATION	2599 (61.8)	130 (3.1)	51 (1.2)	149 (3.5)	1007 (23.9)	273 (6.5)	4209
ENGINEERING	506 (77.8)	14 (2.1)	31 (4.8)	56 (8.6)	40 (6.2)	3 (0.5)	650
HEALTH	179 (80.3)	25 (11.2)	5 (2.2)	6 (2.7)	6 (2.7)	2 (0.9)	223
HOME EC	55 (53.9)	21 (20.6)	1 (1.0)	9 (8.8)	11 (10.8)	5 (4.9)	102
MATH, COMPUTER, PHYSICAL SCIENCES	181 (26.2)	153 (22.1)	40 (5.8)	181 (26.2)	117 (16.9)	19 (2.8)	691
PSYCHOLOGY	26 (7.0)	126 (33.9)	19 (5.1)	84 (22.6)	108 (29.0)	9 (2.4)	372
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	101 (11.5)	275 (31.4)	78 (8.9)	213 (24.3)	186 (21.3)	23 (2.6)	876
DOUBLE MAJORS	7 (13.0)	24 (44.4)	2 (3.7)	12 (22.2)	9 (16.7)	0 (0)	54
TOTAL	4535 (48.2)	1182 (12.6)	334 (3.6)	1111 (11.8)	1863 (19.8)	378 (4.0)	9403

TABLE 3.0

UNEMPLOYED AND SEEKING/EMPLOYED:
BY FIELD OF STUDY RANKED IN RATIOS

	A	B	A/B	
DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	96	152	.632	4
ARCHITECTURE, FINE ARTS	118	173	.682	2
BIOLOGY	148	296	.500	6
BUSINESS	786	1949	.403	8
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	332	929	.357	10
EDUCATION	2424	6903	.351	11
ENGINEERING	213	1103	.193	12
HEALTH	36	386	.093	13
HOME EC	102	256	.398	9
MATH, COMPUTER, PHYSICAL SCIENCES	290	662	.438	7
PSYCHOLOGY	249	390	.638	3
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	716	1165	.615	5
DOUBLE MAJORS	50	61	.820	1
TOTAL	5560	14,425	.385	

TABLE 3.0.1

UNEMPLOYED AND SEEKING/EMPLOYED:
BY FIELD OF STUDY RANKED IN RATIOS
STATE-OWNED INSTITUTIONS

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	8	11	.727	2
BIOLOGY	22	38	.579	5
BUSINESS	73	240	.304	9
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	42	126	.333	6
EDUCATION	1608	4894	.329	7
ENGINEERING	0	0	--	--
HEALTH	6	163	.037	11
HOME EC	2	22	.091	10
MATH, COMPUTER, PHYSICAL SCIENCES	43	141	.305	8
PSYCHOLOGY	67	81	.827	1
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	142	233	.609	4
DOUBLE MAJORS	16	24	.667	3
TOTAL	2029	5973	.340	

TABLE 3.0.2

UNEMPLOYED AND SEEKING/EMPLOYED:
BY FIELD OF STUDY RANKED IN RATIOS:
STATE-RELATED INSTITUTIONS

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	90	61	1.475	6
ARCHITECTURE, FINE ARTS	53	31	1.710	4
BIOLOGY	61	73	.836	9
BUSINESS	254	233	1.090	8
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	70	39	1.795	3
EDUCATION	572	875	.654	12
ENGINEERING	132	585	.226	13
HEALTH	19	28	.679	11
HOME EC	69	47	1.468	7
MATH, COMPUTER, PHYSICAL SCIENCE	120	156	.769	10
PSYCHOLOGY	34	9	3.778	1
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	104	44	2.363	2
DOUBLE MAJORS	22	13	1.692	5
TOTAL	1600	2194	.729	

TABLE 3.0.3

UNEMPLOYED AND SEEKING/EMPLOYED:
BY FIELD OF STUDY RANKED IN RATIOS:
STATE-AIDED INSTITUTIONS

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	6	91	.066	12
ARCHITECTURE, FINE ARTS	1	3	.333	7
BIOLOGY	9	10	.900	5
BUSINESS	42	398	.106	10
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	22	4	5.500	1
EDUCATION	10	55	.182	9
ENGINEERING	17	200	.085	11
HEALTH	0	0	--	--
HOME EC	23	96	.240	8
MATH, COMPUTER, PHYSICAL SCIENCES	13	32	.406	6
PSYCHOLOGY	11	5	2.200	2
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	40	41	.976	4
DOUBLE MAJORS	3	3	1.000	3
TOTAL	197	938	.210	

TABLE 3.0.4

UNEMPLOYED AND SEEKING/EMPLOYED:
BY FIELD OF STUDY RANKED IN RATIOS:
PRIVATE INSTITUTIONS

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	41	67	.612	1
BIOLOGY	18	77	.234	11
BUSINESS	164	376	.436	5
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	95	267	.356	7
EDUCATION	57	120	.475	3
ENGINEERING	52	169	.308	8
HEALTH	3	10	.300	9
HOME EC	2	8	.250	10
MATH, COMPUTER, PHYSICAL SCIENCES	69	137	.504	2
PSYCHOLOGY	59	130	.454	4
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	150	357	.420	6
DOUBLE MAJORS	0	2	0	12
TOTAL	710	1720	.413	

TABLE 3.0.5

UNEMPLOYED AND SEEKING/EMPLOYED:
BY FIELD OF STUDY RANKED IN RATIOS:
CHURCH-RELATED INSTITUTIONS

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	15	61	.246	6
BIOLOGY	38	98	.388	4
BUSINESS	253	702	.360	5
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	103	493	.209	8
EDUCATION	177	959	.185	9
ENGINEERING	12	149	.081	10
HEALTH	8	185	.043	12
HOME EC	6	83	.072	11
MATH, COMPUTER, PHYSICAL SCIENCES	45	196	.230	7
PSYCHOLOGY	78	165	.473	3
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	280	490	.571	1
DOUBLE MAJORS	9	19	.474	2
TOTAL	1024	3600	.284	

TABLE 3.1

UNEMPLOYED AND SEEKING: BY FIELD GROUPED BY RANK AND RATIO

GROUPED RANK	RANGE OF RANKS	RANGE OF RATIO	DEGREE FIELDS ENCOMPASSED
LOW EMPLOYMENT	1–5	.820–.615	AGRICULTURE, ARCHITECTURE & FINE ARTS, PSYCHOLOGY, PUBLIC AFFAIRS & SOCIAL SCIENCES & AREA STUDIES, DOUBLE MAJORS
MEDIUM	6–11	.500–.351	BIOLOGY, BUSINESS, COMMUNICATIONS & ENGLISH & LANGUAGES & LIBRARY SCIENCE, EDUCATION, HOME EC, MATH & COMPUTER & PHYSICAL SCIENCES
HIGH	12–13	.193–.093	ENGINEERING, HEALTH

TABLE 3.1.1

UNEMPLOYED AND SEEKING/EMPLOYED:
BY FIELD OF STUDY GROUPED BY RANK AND RATIO
STATE-OWNED INSTITUTIONS

GROUPED RANK	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
LOW	233	349	.668	1
MEDIUM	1790	5461	.328	2
HIGH	6	163	.037	3
TOTAL	2029	5973	.340	

TABLE 3.1.2

UNEMPLOYED AND SEEKING/EMPLOYED:
BY FIELD OF STUDY GROUPED BY RANK AND RATIO
STATE-RELATED INSTITUTIONS

GROUPED RANK	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
LOW	303	158	1.918	1
MEDIUM	1146	1423	.805	2
HIGH	151	613	.246	3
TOTAL	1600	2194	.729	

TABLE 3.1.3

UNEMPLOYED AND SEEKING/EMPLOYED:
BY FIELD OF STUDY GROUPED BY RANK AND RATIO:
STATE-AIDED INSTITUTIONS

GROUPED RANK	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
LOW	61	143	.427	1
MEDIUM	119	595	.200	2
HIGH	17	200	.085	3
TOTAL	197	938	.210	

TABLE 3.1.4

UNEMPLOYED AND SEEKING/EMPLOYED:
BY FIELD OF STUDY GROUPED BY RANK AND RATIO:
PRIVATE INSTITUTIONS

GROUPED RANK	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
LOW	382	735	.520	1
MEDIUM	622	2531	.246	2
HIGH	20	334	.060	3
TOTAL	1024	3600	.284	

TABLE 3.1.5

UNEMPLOYED AND SEEKING/EMPLOYED:
BY FIELD OF STUDY GROUPED BY RANK AND RATIO:
CHURCH-RELATED INSTITUTIONS

GROUPED RANK	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
LOW	250	556	.450	1
MEDIUM	405	985	.411	2
HIGH	55	179	.307	3
TOTAL	710	1720	.413	

TABLE 3.2

UNEMPLOYED AND SEEKING/EMPLOYED:
RATIOS BY ENROLLMENT SIZE

ENROLLMENT SIZE	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
500 AND BELOW	16	199	.080	7
501 TO 1000	149	1258	.118	6
1001 TO 1500	372	1434	.259	5
1501 TO 2000	398	1385	.287	4
2001 TO 4000	1447	3181	.455	2
4001 TO 10,000	1584	4801	.330	3
ABOVE 10,000	1594	2167	.736	1
TOTAL	5560	14,425	.385	

TABLE 3.3

EMPLOYMENT AND UNEMPLOYMENT:
RATIOS AND RANKS BY FIELD AND BY SECTOR

	EASTERN		CENTRAL		WESTERN		ALL STATE	
DEGREE FIELDS	RATIO	RANK*	RATIO	RANK*	RATIO	RANK*	RATIO	RANK*
AGRICULTURE	.066	13	1.475	3	--	--	.632	4
ARCHITECTURE, FINE ARTS	.147	10	2.074	2	.718	1	.682	2
BIOLOGY	.333	6	1.461	4	.274	8	.500	6
BUSINESS	.356	4	.871	9	.247	9	.403	8
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	.254	7	.885	8	.319	6	.357	10
EDUCATION	.351	5	.323	13	.369	4	.351	11
ENGINEERING	.104	11	.622	11	.077	11	.077	12
HEALTH	.072	12	.455	12	.029	12	.093	13
HOME EC	.187	9	1.435	5	.145	10	.398	9
MATH, COMPUTER, PHYSICAL SCIENCES	.220	8	1.218	6	.350	5	.438	7
PSYCHOLOGY	.492	3	1.046	7	.711	2	.638	3
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	.608	1	.842	10	.495	3	.615	5
DOUBLE MAJORS	.579	2	2.727	1	.290	7	.820	1
TOTAL	.335		.591		.326		.385	

*RANK IN TERMS OF UNEMPLOYMENT

TABLE 3.3.1

UNEMPLOYED AND SEEKING/EMPLOYED:
RATIOS BY FIELD: EASTERN SECTOR

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	6	91	.066	13
ARCHITECTURE, FINE ARTS	11	75	.147	10
BIOLOGY	29	87	.333	6
BUSINESS	298	836	.356	4
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	130	512	.254	7
EDUCATION	847	2411	.351	5
ENGINEERING	38	366	.104	11
HEALTH	10	138	.072	12
HOME EC	25	134	.187	9
MATH, COMPUTER, PHYSICAL SCIENCES	50	227	.220	8
PSYCHOLOGY	96	195	.492	3
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	349	574	.608	1
DOUBLE MAJORS	11	19	.579	2
TOTAL	1900	5665	.335	

TABLE 3.3.2

UNEMPLOYED AND SEEKING/EMPLOYED:
RATIOS BY FIELD: CENTRAL SECTOR

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	90	61	1.475	3
ARCHITECTURE, FINE ARTS	56	27	2.074	2
BIOLOGY	76	52	1.461	4
BUSINESS	297	341	.871	9
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	103	122	.885	8
EDUCATION	570	1763	.323	13
ENGINEERING	135	217	.622	11
HEALTH	20	44	.455	12
HOME EC	66	46	1.435	5
MATH, COMPUTER, PHYSICAL SCIENCE	123	101	1.218	6
PSYCHOLOGY	45	43	1.046	7
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	181	215	.842	10
DOUBLE MAJORS	30	11	2.727	1
TOTAL	1797	3043	.591	

TABLE 3.3.3

UNEMPLOYED AND SEEKING/EMPLOYED:
RATIOS BY FIELD: WESTERN SECTOR

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	51	71	.718	1
BIOLOGY	43	157	.274	8
BUSINESS	191	772	.247	9
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	94	295	.319	6
EDUCATION	1007	2729	.369	4
ENGINEERING	40	520	.077	11
HEALTH	6	204	.029	12
HOME EC	11	76	.145	10
MATH, COMPUTER, PHYSICAL SCIENCES	117	334	.350	5
PSYCHOLOGY	108	152	.711	2
PUBLIC AFFAIRS, SOCIAL SCIENCES AREA STUDIES	186	376	.495	3
DOUBLE MAJORS	9	31	.290	7
TOTAL	1863	5717	.326	

TABLE 4.0

EMPLOYED IN RELATED OCCUPATIONS/EMPLOYED IN REMOTE OCCUPATIONS:
BY FIELDS OF STUDY

	EASTERN		CENTRAL		WESTERN		ALL STATE	
DEGREE FIELDS	RATIO	RANK*	RATIO	RANK*	RATIO	RANK*	RATIO	RANK*
AGRICULTURE	2.791	8	5.778	9	--	--	3.606	9
ARCHITECTURE, FINE ARTS	.471	4	1.077	7	.972	6	.730	5
BIOLOGY	.740	6	.926	5	.869	5	.839	6
BUSINESS	25.967	12	10.759	12	14.137	10	16.559	13
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	.143	1	.258	1	.214	2	.179	1
EDUCATION	8.722	11	6.470	10	19.992	11	10.243	10
ENGINEERING	8.385	10	7.346	11	36.143	12	12.962	12
HEALTH	68.000	13	43.000	13	7.160	9	12.786	11
HOME EC	6.053	9	1.300	8	2.619	8	3.267	8
MATH, COMPUTER, PHYSICAL SCIENCES	1.183	7	1.020	6	1.183	7	1.156	7
PSYCHOLOGY	.309	3	.265	2	.206	1	.262	2
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	.216	2	.369	3	.367	4	.289	3
DOUBLE MAJORS	.583	5	.833	4	.292	3	.452	4
TOTAL	2.435		3.316		3.837		3.079	

*RANK IN TERMS OF REMOTENESS

TABLE 4.0.1

RELATED/REMOTE: BY DEGREE FIELD
STATE-OWNED INSTITUTIONS

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	10	1	10.000	10
BIOLOGY	7	31	.226	2
BUSINESS	209	31	6.742	9
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	18	108	.167	1
EDUCATION	4479	415	10.793	11
ENGINEERING	0	0	--	--
HEALTH	138	25	5.52	8
HOME EC	16	6	2.667	7
MATH, COMPUTER, PHYSICAL SCIENCES	41	100	.410	5
PSYCHOLOGY	15	66	.227	3
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	94	139	.676	6
DOUBLE MAJORS	6	18	.333	4
TOTAL	5033	940	5.354	

TABLE 4.0.2

RELATED/REMOTE: BY DEGREE FIELD
STATE-RELATED INSTITUTIONS

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	52	9	5.778	8
ARCHITECTURE, FINE ARTS	12	19	.632	3
BIOLOGY	61	12	5.083	6
BUSINESS	228	5	45.600	12
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	15	24	.625	2
EDUCATION	785	90	8.722	9
ENGINEERING	562	23	24.435	11
HEALTH	28	0	high	13
HOME EC	40	7	5.714	7
MATH, COMPUTER, PHYSICAL SCIENCES	140	16	8.750	10
PSYCHOLOGY	3	6	.500	1
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	22	22	1.000	5
DOUBLE MAJORS	6	7	.857	4
TOTAL	1954	240	8.142	

TABLE 4.0.3

RELATED/REMOTE: BY DEGREE FIELD
STATE-AIDED INSTITUTIONS

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	67	24	2.792	7
ARCHITECTURE, FINE ARTS	1	2	.500	5
BIOLOGY	7	3	2.333	6
BUSINESS	392	6	65.333	11
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	0	4	0	1½
EDUCATION	42	13	3.231	8
ENGINEERING	198	2	96.000	12
HEALTH	0	0	--	--
HOME EC	92	4	23.000	10
MATH, COMPUTER, PHYSICAL SCIENCES	28	4	7.000	9
PSYCHOLOGY	1	4	.250	4
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	8	33	.242	3
DOUBLE MAJORS	0	3	0	1½
TOTAL	836	102	8.196	

TABLE 4.0.4

RELATED/REMOTE: BY DEGREE FIELD
PRIVATE INSTITUTIONS

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	32	35	.914	7
BIOLOGY	20	57	.351	5
BUSINESS	353	23	15.348	11
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	52	215	.242	4
EDUCATION	104	16	6.500	9
ENGINEERING	134	35	3.829	8
HEALTH	10	0	high	12
HOME EC	7	1	7.000	10
MATH, COMPUTER, PHYSICAL SCIENCES	59	78	.756	6
PSYCHOLOGY	24	106	.226	3
PUBLIC AFFAIRS, SOCIAL SCIENCE, AREA STUDIES	36	321	.112	2
DOUBLE MAJORS	0	2	0	1
TOTAL	831	889	.935	

TABLE 4.0.5

RELATED/REMOTE: BY DEGREE FIELD
CHURCH-RELATED INSTITUTIONS

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	18	43	.419	4
BIOLOGY	40	58	.690	6
BUSINESS	656	46	14.261	11
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	56	437	.128	1
EDUCATION	879	80	10.988	10
ENGINEERING	130	19	6.842	9
HEALTH	182	3	60.667	12
HOME EC	41	42	.976	8
MATH, COMPUTER, PHYSICAL SCIENCES	87	109	.798	7
PSYCHOLOGY	38	127	.299	3
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	101	389	.260	2
DOUBLE MAJORS	7	12	.583	5
TOTAL	2235	1365	1.637	

TABLE 4.1.1

RELATED/REMOTE: BY FIELD OF STUDY
RESEARCH UNIVERSITIES

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	52	9	5.778	7
ARCHITECTURE, FINE ARTS	38	33	1.152	5
BIOLOGY	63	14	4.500	6
BUSINESS	424	6	70.667	12
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	15	32	.469	2
EDUCATION	829	95	8.726	9
ENGINEERING	654	36	18.167	11
HEALTH	28	0	high	13
HOME EC	115	8	14.375	10
MATH, COMPUTER, PHYSICAL SCIENCE	147	24	6.125	8
PSYCHOLOGY	3	15	.200	1
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	24	45	.533	3
DOUBLE MAJOR	6	10	.600	4
TOTAL	2398	327	7.333	

TABLE 4.1.2

RELATED/REMOTE: BY FIELD OF STUDY
SMALL UNIVERSITIES

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	5	2	2.500	7
BIOLOGY	18	31	.581	4
BUSINESS	486	23	21.130	11
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	27	140	.193	2
EDUCATION	549	50	10.980	10
ENGINEERING	291	11	26.455	12
HEALTH	134	25	5.360	9
HOME EC	40	10	4.000	8
MATH, COMPUTER, PHYSICAL SCIENCES	80	83	.964	5
PSYCHOLOGY	10	59	.169	1
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	6	133	.496	3
DOUBLE MAJORS	2	2	1.000	6
TOTAL	1708	569	3.002	

TABLE 4.1.3

RELATED/REMOTE: BY FIELD OF STUDY
COLLEGES

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	30	65	.461	6
BIOLOGY	52	114	.456	5
BUSINESS	914	76	12.026	11
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	99	616	.161	1
EDUCATION	4911	469	10.471	10
ENGINEERING	79	32	2.469	9
HEALTH	169	3	65.333	12
HOME EC	41	42	.976	8
MATH, COMPUTER, PHYSICAL SCIENCES	126	200	.630	7
PSYCHOLOGY	68	235	.289	3
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	171	726	.235	2
DOUBLE MAJORS	11	30	.367	4
TOTAL	6698	2608	2.568	

TABLE 4.1.4

RELATED/REMOTE: BY FIELD OF STUDY
SPECIALIZED SCHOOLS

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	67	24	2.792	3
ARCHITECTURE, FINE ARTS	0	0	--	--
BIOLOGY	2	2	1.000	1
BUSINESS	14	6	2.333	2
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	0	0	--	--
EDUCATION	0	0	--	--
ENGINEERING	0	0	--	--
HEALTH	0	0	--	--
HOME EC	0	0	--	--
MATH, COMPUTER, PHYSICAL SCIENCES	2	0	high	4
PSYCHOLOGY	0	0	--	--
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	0	0	--	--
DOUBLE MAJORS	0	0	--	--
TOTAL	85	32	2.656	

TABLE 4.2.1

EMPLOYED IN RELATED CATEGORIES: COMMUNICATIONS, LETTERS, LIBRARY SCIENCE, FOREIGN LANGUAGES

COMMUNICATIONS, LETTERS, LIBRARY SCIENCE, FOREIGN LANGUAGES

Degree Fields →

Employment and Occupations ↓

	0602 Journalism	0603 Radio/television	0604 Advertising	0605 Communications media	0601 Communications, General	1502 Literature, English	1503 Comparative literature	1504 Classics	1505 Linguistics	1506 Speech, debate, and forensic science	1507 Creative writing	1501 English, General	1509 Philosophy	1510 Religious studies	1601 Library Science	1102 French	1103 German	1105 Spanish	1106 Russian	1104 Italian	1109 Latin	1110 Greek, Classical	1107/8 Chinese/Japanese	1111 Hebrew	1101 Foreign languages, General	1199 Other, Specify
A. TOTAL NUMBER OF DEGREES AWARDED	210	77	51	0	54	579	14	13	12	162	128	165	314	248	17	330	126	276	38	4	14	9	5	4	21	8
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY																										
044 Journalist	2				3						1	3														
126 Announcer	1	1							2		1	2														
127 Reporter	6								1			10														
128 Advertising Specialist	2								1		1	6														
129 Editors and Reporters, n.e.c.	2											16														
130 Free-lance writer	1											5														
131 Author, biographer, novelist																										
132 Critic																										
133 Linguist																										
134 Social scientist, n.e.c.	1											1		1				1								
135 Philosophy teacher													1					1								
136 Speech & drama teacher					1					1			1													
137 Librarian, library attendant, assistant												8		1	2	1										
138 Foreign language teacher--college/univ.					1					1		21				4	1	13								
139 Language translator																										
500 Other teachers: college/univ.												5	1				1									
525 Teachers except college/univ.	1				79		2		2	3	143	9	13			22	12	39	1		3				7	
600 Professional, technical workers, n.e.c.	1	1			7				4	3	27	11	7			4	1	5	1							
625 Manager or administration					8				3	2	45	6	4			6	1	1	1			1				
650 Sales workers					3				2	1	26	2	5			8	2	5								
675 Clerical/kindred workers	1				12				2		39	4	16			22	3	6	1							
700 Craftsmen/kindred												1	1				1									
725 Operations (except transport)											3	2														
750 Transport equipment operations											4		1					1								
775 Laborers, except farm					1				1		10	2	3			1										
800 Farmers/farm mgr.											2															
825 Farm laborers/foremen											1															
850 Service workers, n.e.c.	3				1				1		8		5				1	2								
875 Food service workers											3	2	1				1									
900 Health service workers					1				1		5	1	10			1	1	1								
925 Personal service workers									1			1	35			1	1									
950 Protective service workers											1															
975 Household service workers																	1									

TABLE 4.2.2

EMPLOYED IN RELATED CATEGORIES: ENGINEERING

ENGINEERING Degree Fields → Employment and Occupations ↓	0902 Aerospace, aeronautical, and astronautical engineering	0903 Agricultural engineering	0904 Architectural engineering	0905 Bioengineering and biomedical engineering	0906/7 Chemical, petroleum engineering	0908 Civil, construction, transportation engineering	0909 Electrical, electronic, and communications engineering	0910 Mechanical engineering	0911/2 Geological, geophysical, mining engineering	0913/25 Industrial and management engineering and technologies	0914 Metallurgical engineering	0915 Materials engineering	0916/17 Ceramic and textile engineering	0919 Engineering physics	0920 Nuclear engineering	0921 Engineering mechanics	0922/3 4 Environmental, sanitary, naval, and ocean engineering	0901 Engineering, General	0999 Other, Specify
A. TOTAL NUMBER OF DEGREES AWARDED	43	8	22	1	277	293	582	414	19	165	73	0	37	12	12	41	0	111	17
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY																			
151 Aero-Astro engineering	2				48		1	1										1	4
152 Chemical engineering					9	6													
153 Petroleum engineering					3	67													
154 Civil engineering					1	1	121											1	
155 Electrical/electronic engineering						1	3	1		12	3		3						
156 Industrial engineering					1		1	53		7	8								
157 Mechanical engineering, Metallurgical engineering									5		4								
158 Mining/Petroleum engineering	4		11		20	28	36	31		8			1			11		9	
159 Engineering n.e.c.		1			3		6	6		2	3								
160 Sales engineering					1	1	1												
161 Life/Physical sci.							5											1	
082 Operations res. anal.							3												
203 Computer programmers							2			1								1	
204 Computers syst. anal.							3	2											
205 Engineer-computer application					1														
206 Computer specialist, n.e.c.		2					5	2								5			
162 Engineering teacher--college/univ.																			
071 Engineering and science technologist, n.e.c.																			
500 *Other teachers: college/univereity*																			
525 *Teachers except college/univereity*																			
600 *Professional, technical workers, not elsewhere classified*	1				4	1	5	7		3								19	
625 *Manager or administration*							8	7	1	2	2							1	
650 *Sales workers*							1												
675 *Clerical/kindred workers*								1		1								1	
700 *Craftsmen/kindred*						2													
725 *Operations (except transport)*									3	1									
750 *Transport equipment operations*		1																	
775 *Laborers, except farm*						3		1											
800 *Farmers/farm mgr.*																			
825 *Farm laborers/foremen*					2		1												
850 *Service workers, n.e.c.*																		1	
875 *Food service workers*																			
900 *Health service workers*																			
925 *Personal service workers*																			
950 *Protective service workers*																			
975 *Household service workers*																			

TABLE 4.2.3

EMPLOYED IN RELATED CATEGORIES: SOCIAL SCIENCES, PSYCHOLOGY

SOCIAL SCIENCES
PSYCHOLOGY

Degree Fields →

Employment and Occupations ↓

	2202/3 Anthropology, Archaeology	2204 Economics	2205 History	2206/15 Geography, Demography	2207 Political science, government	2208 Sociology	2209 Criminology	2210 International Relations	2211 Afro-American Studies (Black Culture)	2214 Urban Studies	2201 Social Sciences, General	2299 Other Social Science (Specify)	2002 Experimental Psychology	2003 Clinical Psychology	2004 Psychology for counseling	2005 Social psychology	2006/7 Psychometrics, Statistics	2008 Industrial Psychology	2009 Developmental Psychology	2010 Physiological Psychology	2099 Other Psychology, Specify
A. TOTAL NUMBER OF DEGREES AWARDED	178	923	1747	173	1526	1326	79	48	0	24	468	60									
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY																					
251 Anthropologist, Archaeologist, Ethnographer	1																				
252 Economist		7	2																		
253 Historian			1																		
254 Geographer, Demographer					3																
255 Political Scientist			1		1																
092 Lawyers					2	4															
256 Sociologist	9	2	9	1	9	76	2				12										
257 Social Worker, not specified		1	3		2	11	13			1	1										
258 Criminologist, Law Enforcement, Corrections Officer																					
133 Linguist			1	1	1	1				3	1	1									
030/ 031 Regional, Urban Planner			1		4	5				2											
134 Social Scientist, n.e.c.			5		1	8					2										
259 Social Science, Psychology Teacher--college/university		1	1								5										
500 *Other teachers: college/university*		7	100	22	15	39		1			10										
525 *Teachers except college/university*	1	34	47	1	43	28				1	12	1									
600 *Professional, technical workers, not elsewhere classified*	3	55	54	5	51	25	3			2	18	2									
625 *Manager or administration*	8	23	19	2	32	16	1	1			14										
650 *Sales workers*	1	14	31		18	21					7										
675 *Clerical/kindred workers*		1	3		2	2															
700 *Craftsmen/kindred*					3	1															
725 *Operations (except transport)*	1				1	1															
750 *Transport equipment operations*		3	18	1	4	6				1	1	6									
775 *Laborers, except farm*					1						1										
800 *Farmer/farm mgr.*			1																		
825 *Farm laborers/foremen*		3	4		5	6															
850 *Service workers, n.e.c.*		2	5		1	1															
875 *Food service workers*		2	4		1	4				1	1										
900 *Health service workers*			2			2															
925 *Personal service workers*		1			1	1															
950 *Protective service workers*						2															
975 *Household service workers*																					

TABLE 4.3

EMPLOYMENT IN EACH REMOTE CATEGORY

CATEGORY NUMBER	CATEGORY DESCRIPTION	EMPLOYMENT FREQUENCY
500	OTHER TEACHERS: COLLEGE, UNIVERSITY	22
525	TEACHERS EXCEPT COLLEGE, UNIVERSITY	897
600	PROFESSIONAL, TECHNICAL WORKERS, N.E.C.	682
625	MANAGER OR ADMINISTRATION	590
650	SALES WORKERS	342
675	CLERICAL/KINDRED WORKERS	380
700	CRAFTSMEN/KINDRED	42
725	OPERATIONS (EXCEPT TRANSPORT)	29
750	TRANSPORT EQUIPMENT OPERATIONS	23
775	LABORERS, EXCEPT FARM	155
800	FARMERS/FARM MGR.	6
825	FARM LABORERS/FOREMEN	7
850	SERVICE WORKERS, N.E.C.	107
875	FOOD SERVICE WORKERS	40
900	HEALTH SERVICE WORKERS	69
925	PERSONAL SERVICE WORKERS	58
950	PROTECTIVE SERVICE WORKERS	15
975	HOUSEHOLD SERVICE WORKERS	72
	TOTAL	3536

TABLE 5.0

GEOGRAPHIC LOCATION OF EMPLOYMENT: BY CATEGORY

(% OF REPORTED)

DEGREE FIELDS	IN PENNSYLVANIA			OUTSIDE PENNSYLVANIA			TOTAL
	SAME COUNTY AS INSTITUTION	ADJACENT COUNTY	ELSEWHERE IN P A.	ADJACENT STATE	ELSEWHERE IN U.S.	ABROAD	
AGRICULTURE	12 (7.9)	16 (10.5)	67 (44.1)	46 (30.3)	11 (7.2)	0 (0)	152
ARCHITECTURE, FINE ARTS	33 (20.9)	23 (14.6)	26 (16.5)	50 (31.7)	22 (13.9)	4 (2.5)	158
BIOLOGY	88 (29.1)	49 (16.2)	69 (22.9)	52 (17.2)	36 (11.9)	8 (2.7)	302
BUSINESS	619 (33.0)	358 (19.0)	385 (20.5)	342 (18.2)	165 (18.8)	8 (0.4)	1877
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	219 (23.0)	187 (19.7)	138 (14.5)	253 (26.6)	130 (13.7)	25 (2.6)	952
EDUCATION	1291 (19.5)	1936 (29.2)	2103 (31.7)	899 (13.6)	348 (5.3)	58 (0.9)	6635
ENGINEERING	240 (24.8)	79 (8.2)	201 (20.8)	194 (20.0)	237 (24.5)	16 (1.7)	967
HEALTH	99 (31.8)	74 (23.8)	64 (20.6)	45 (1.3)	28 (9.0)	1 (0.3)	311
HOME EC	40 (18.8)	26 (12.2)	35 (16.4)	68 (2.8)	38 (17.8)	6 (2.8)	213
MATH, COMPUTER, PHYSICAL SCIENCES	148 (2.9)	129 (20.8)	117 (18.9)	130 (21.0)	90 (14.5)	5 (0.8)	619
PSYCHOLOGY	81 (22.2)	78 (21.4)	74 (20.3)	84 (23.0)	42 (11.5)	6 (1.7)	365
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	274 (24.3)	225 (20.4)	224 (20.3)	234 (21.2)	127 (11.5)	19 (1.7)	1103
DOUBLE MAJORS	22 (37.9)	15 (25.9)	9 (15.5)	6 (10.4)	5 (8.6)	1 (1.7)	58
TOTAL	3166 (23.2)	3195 (23.3)	3512 (25.6)	2403 (17.5)	1279 (9.3)	157 (1.2)	13,712

TABLE 5.1

GEOGRAPHIC LOCATION OF EMPLOYMENT BY LOCATION OF INSTITUTION

(% OF TOTAL)

REGION LOCATION OF INSTITUTION	IN PENNSYLVANIA			OUTSIDE PENNSYLVANIA			TOTAL
	SAME COUNTY AS INST.	ADJACENT COUNTY	ELSEWHERE IN PA.	ADJACENT STATE	ELSEWHERE IN U.S.	ABROAD	
DELAWARE	1050 (30.9)	828 (24.3)	472 (13.9)	705 (20.7)	295 (8.7)	54 (1.6)	3404
LEHIGH	199 (24.3)	210 (25.6)	192 (23.4)	164 (20.0)	53 (6.5)	2 (0.3)	820
NORTHEAST	205 (31.3)	85 (13.0)	189 (28.9)	135 (20.6)	38 (5.8)	3 (0.5)	655
NORTHERN	26 (6.9)	50 (13.2)	220 (58.0)	76 (20.1)	6 (1.6)	1 (0.3)	379
SUSQUEHANNA	144 (7.3)	253 (12.8)	967 (48.7)	382 (19.3)	229 (11.5)	10 (0.5)	1985
CAPITOL	104 (11.3)	465 (50.4)	141 (15.3)	151 (16.4)	52 (5.6)	9 (0.1)	922
TURNPIKE	22 (12.1)	15 (8.3)	60 (33.0)	59 (32.4)	21 (11.5)	5 (2.8)	182
NORTHCENTRAL	0	0	0	0	0	0	0
NORTHWEST	279 (17.3)	232 (14.3)	624 (38.6)	270 (16.7)	173 (10.7)	40 (2.5)	1618
SOUTHWEST	1137 (30.4)	1057 (28.2)	647 (17.3)	461 (12.3)	412 (11.0)	33 (0.9)	3747
TOTAL	3166 (23.1)	3195 (23.3)	3512 (25.6)	2403 (17.5)	1279 (9.3)	157 (1.2)	13,712

TABLE 5.2

GEOGRAPHIC LOCATION OF EMPLOYMENT BY TYPE OF INSTITUTIONAL CONTROL

(% OF TOTAL)

	IN PENNSYLVANIA			OUTSIDE PENNSYLVANIA			
TYPE OF INSTITUTIONAL CONTROL	SAME COUNTY AS INST.	ADJACENT STATE	ELSEWHERE IN PA.	ADJACENT STATE	ELSEWHERE IN U.S.	ABROAD	TOTAL
STATE-OWNED	816 (14.2)	1939 (33.6)	1975 (34.2)	757 (13.1)	259 (4.5)	30 (0.5)	5776
STATE-RELATED	497 (26.7)	183 (9.8)	648 (34.7)	236 (12.7)	296 (15.9)	6 (0.3)	1866
STATE-AIDED	368 (39.1)	129 (13.7)	81 (8.6)	245 (26.0)	95 (10.1)	25 (2.7)	943
PRIVATE	396 (22.9)	313 (18.0)	304 (17.5)	414 (23.9)	270 (15.6)	38 (2.2)	1735
CHURCH-RELATED	1089 (32.1)	631 (18.6)	504 (14.9)	751 (22.1)	359 (10.6)	58 (1.7)	3392
TOTAL	3166 (23.1)	3195 (23.3)	3512 (25.6)	2403 (17.5)	1279 (9.3)	157 (1.2)	13,712

Appendix B: Comm-Bacc Reporting Schedule

I. Agriculture and Natural Resources

COMM-BACC STUDY 1971-72:

Institution Reporting

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(I.) AGRICULTURE AND NATURAL RESOURCES

Degree Fields →

Employment and Occupations ↓

	0101 Agriculture, General	0102 Agronomy	0103 Soils Science	0104 Animal Science (Husbandry)	0105 Dairy Science	0106 Poultry Science	0108 Horticulture	0109 Ornamental Horticulture	0110 Agriculture and Farm Management	0111 Agricultural Economics	0112 Agricultural Business	0113 Food Science, Technology	0109/ 0114-7 Forestry, Fish, Game, Range Management, Agricultural, Forest Technology	0199 Other, Specify
A. TOTAL NUMBER OF DEGREES AWARDED														
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY														
001 Agricultural scientist														
002 Agricultural agent														
003 Agronomist														
004 Conservationist														
005 Animal breeder														
006 Dairyman														
007 Poultryman														
008 Nurseryman														
009/ 10 Horticulturist or floriculturist														
011 Farm manager, supt.														
012 Agr. economist														
013 Purchasing agent, farm products														
014 Forester														
015 Range manager														
016 Wood, agr. technician														
017 Agr. technician														
018 Agr. engineer														
019 Agr. teacher--college/univ.														
800 Farmer/farm manager														
825 Farm foreman, laborer														
500 Other teachers: college/univ.														
525 Teachers except college/univ.														
600 Professional, technical workers, not elsewhere classified														
625 Manager or administration														
650 Sales workers														
675 Clerical/kindred workers														
700 Craftsmen/kindred														
725 Operations (except transport)														
750 Transport equipment operations														
775 Laborers, except farm														
850 Service workers, n.e.c.														
875 Food service workers														
900 Health service workers														
925 Personal service workers														
950 Protective service workers														
975 Household service workers														
C. EMPLOYMENT LOCATION														
a) In same county as college or university														
b) In adjacent counties														
c) Elsewhere in Pennsylvania														
d) In adjacent state (Ohio, New Jersey, New York, Delaware, Maryland)														
e) Elsewhere in U.S.														
f) Abroad														
D. REPORTED NOT EMPLOYED: BY ALTERNATE ACTIVITY														
a) Military service														
b) Graduate study--planning or pursuing full-time program														
c) Not employed: seeking work														
d) Not employed: not seeking work														
E. NOT REPORTED														

RETURN TO: COMM-BACC, 119 Rackley Building, University Park, Pennsylvania 16802

The other eleven schedules used to collect Comm-Bacc data are not included in this Appendix. The titles are listed here to indicate the categories of data collected:

II. Biological Sciences
III. Business Administration and Management
IV. Communications, Letters, Library Science, Foreign Languages
V. Education
VI. Engineering
VII. Fine Arts, Applied Arts, Architecture, Environmental Design
VIII. Health
IX. Home Economics
X. Physical Sciences, Mathematics, Computer and Information Sciences
XI. Public Affairs & Service, Area Studies, Interdisciplinary Studies
XII. Social Sciences, Psychology

COMM-BACC STUDY 1971-72:

Institution Reporting

_____

(II.) BIOLOGICAL SCIENCES

Degree Fields →

Employment and Occupations ↓

	0401 Biology, General	0402 Botany, General	0403 Bacteriology	0406/10 Plant, animal physiology	0407 Zoology, General	0409 Pharmacology	0411 Microbiology	0412 Anatomy	0413 Histology	0414 Biochemistry (incl. apr. chem.)	0415 Biophysics	0416/7 Molecular, cell biology	0418 Marine biology	0420 Ecology	0421 Entomology	0422 Genetics	0424 Nutrition, scientific (excl. home econ., diet.)	0427 Embryology	0499 Other biol. (Specify)
A. TOTAL NUMBER OF DEGREES AWARDED																			
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY																			
051 Biologist, biological scientist																			
052 Botanist																			
053 Marine biologist																			
054 Physiologist																			
055 Zoologist																			
056 Pharmacologist																			
057 Bacteriologist, microbiologist																			
058 Anatomist, histologist																			
059 Biochemist																			
060 Entomoligist																			
061 Cytologist																			
062 Embryologist																			
063 Ecologist																			
064 Toxicologist																			
065 Geneticist																			
014 Forester, conservationist																			
017 Agr., biol. technicians, except health																			
071 Engr., science technicians, n.e.c.																			
072 Biology teachers--college/university																			
500 Other teachers: college/university																			
525 Teachers except college/university																			
600 Professional, technical workers, not elsewhere classified																			
625 Manager or administration																			
650 Sales workers																			
675 Clerical/kindred workers																			
700 Craftsmen/kindred																			
725 Operations (except transport)																			
750 Transport equipment operations																			
775 Laborers, except farm																			
800 Farmers/farm mgr.																			
825 Farm laborers/foremen																			
850 Service workers, n.e.c.																			
875 Food service workers																			
900 Health service workers																			
925 Personal service workers																			
950 Protective service workers																			
975 Household service workers																			
C. EMPLOYMENT LOCATION																			
a) In same county as college or university																			
b) In adjacent counties																			
c) Elsewhere in Pennsylvania																			
d) In adjacent state (Ohio, New Jersey, New York, Delaware, Maryland)																			
e) Elsewhere in U.S.																			
f) Abroad																			
D. REPORTED NOT EMPLOYED: BY ALTERNATE ACTIVITY																			
a) Military service																			
b) Graduate study--planning or pursuing full-time program																			
c) Not employed: seeking work																			
d) Not employed: not seeking work																			
E. NOT REPORTED																			

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COMM-BACC STUDY 1971-72:

Institution Reporting

_____

(III.) BUSINESS ADMINISTRATION AND MANAGEMENT

Degree Fields →

Employment and Occupations ↓

	0501 Business and commerce, General	0502 Accounting	0503 Business statistics	0504 Banking and finance	0505 Investments and securities	0506 Business management and administration	0507 Operations research	0508 Hotel and restaurant management	0509 Marketing and purchasing	0510 Transportation and public utilities	0511 Real estate	0512 Insurance	0513 International business	0515 Personnel management	0516 Labor and industrial relations	0517 Business economics	0599 Other, Specify
A. TOTAL NUMBER OF DEGREES AWARDED																	
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY																	
076 Accountants																	
077 Auditors																	
078 Income tax consultants																	
201 Statisticians																	
079 Bank officers, tellers, fin. managers																	
080 Stock and bond salesmen																	
625 Managers and administrators, n.s.																	
082 Operations and systems researchers and analysts																	
083 Restaurant, cafeteria, bar managers																	
084 Wholesale and retail purchasing agents																	
085 Advertising agents and salesmen																	
086 Real estate sales, appraisers																	
087 Insurance agents, underwriters, adjusters																	
650 Sales workers, n.e.c.																	
089 Personnel and labor rel. workers																	
090 Business economists																	
091 Market analysts																	
092 Lawyers																	
203 Computer programmers																	
206 Computer specialists, n.e.c.																	
093 Clerical assistants, n.e.c.																	
094 Receptionists, secretaries, typists																	
675 Clerical/kindred workers, n.e.c.																	
096 Business and commerce teachers																	
500 Other teachers: college/university																	
525 Teachers except college/university																	
600 Professional, technical workers, not elsewhere classified																	
700 Craftsmen/kindred																	
725 Operations (except transport)																	
750 Transport equipment operations																	
775 Laborers, except farm																	
800 Farmers/farm mgr.																	
825 Farm laborers/foremen																	
850 Service workers, n.e.c.																	
875 Food service workers																	
900 Health service workers																	
925 Personal service workers																	
950 Protective service workers																	
975 Household service workers																	
C. EMPLOYMENT LOCATION																	
a) In same county as college or university																	
b) In adjacent counties																	
c) Elsewhere in Pennsylvania																	
d) In adjacent state (Ohio, New Jersey, New York, Delaware, Maryland)																	
e) Elsewhere in U.S.																	
f) Abroad																	
D. REPORTED NOT EMPLOYED: BY ALTERNATE ACTIVITY																	
a) Military service																	
b) Graduate study--planning or pursuing full-time program																	
c) Not employed: seeking work																	
d) Not employed: not seeking work																	
E. NOT REPORTED																	

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COMM-BACC STUDY 1971-72:
Institution Reporting

(IV.) COMMUNICATIONS, LETTERS, LIBRARY SCIENCE, FOREIGN LANGUAGES

Degree Fields →

Employment and Occupations ↓

	0602 Journalism	0603 Radio/television	0604 Advertising	0605 Communications media	0601 Communications, General	1502 Literature, English	1503 Comparative literature	1504 Classics	1505 Linguistics	1506 Speech, debate, and forensic science	1507 Creative writing	1501 English, General	1509 Philosophy	1510 Religious studies	1601 Library Science	1102 French	1103 German	1105 Spanish	1106 Russian	1104 Italian	1109 Latin	1110 Greek, Classical	1107/8 Chinese/Japanese	1111 Hebrew	1101 Foreign languages, General	1199 Other, Specify
A. TOTAL NUMBER OF DEGREES AWARDED																										
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY																										
044 Journalist																										
126 Announcer																										
127 Reporter																										
128 Advertising Specialist																										
129 Editors and Reporters, n.e.c.																										
130 Free-lance writer																										
131 Author, biographer, novelist																										
132 Critic																										
133 Linguist																										
134 Social scientist, n.e.c.																										
135 Philosophy teacher																										
136 Speech & drama teacher																										
137 Librarian, library attendant, assistant																										
138 Foreign language teacher--college/univ.																										
139 Language translator																										
500 Other teachers: college/univ.																										
525 Teachers except college/univ.																										
600 Professional, technical workers, n.e.c.																										
625 Manager or administration																										
650 Sales workers																										
675 Clerical/kindred workers																										
700 Craftsmen/kindred																										
725 Operations (except transport)																										
750 Transport equipment operations																										
775 Laborers, except farm																										
800 Farmers/farm mgr.																										
825 Farm laborers/foremen																										
850 Service workers, n.e.c.																										
875 Food service workers																										
900 Health service workers																										
925 Personal service workers																										
950 Protective service workers																										
975 Household service workers																										
C. EMPLOYMENT LOCATION																										
a) In same county as college or university																										
b) In adjacent counties																										
c) Elsewhere in Pennsylvania																										
d) In adjacent state (Ohio, New Jersey, New York, Delaware, Maryland)																										
e) Elsewhere in U.S.																										
f) Abroad																										
D. REPORTED NOT EMPLOYED: BY ALTERNATE ACTIVITY																										
a) Military service																										
b) Graduate study--planning or pursuing full-time program																										
c) Not employed: seeking work																										
d) Not employed: not seeking work																										
E. NOT REPORTED																										

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V. EDUCATION

Degree Fields →

Employment and Occupations ↓

	0802 Elementary and Pre-School Education, General	0803 Special Education, n.s.	0804 Art Education	0805 Music Education	0806 Reading	0807/8 Health/Physical Education	0809 Business Education	0810 Industrial Arts, Vocational and Technical Education	0811 Home Economics	0812 English (Education)	0813 Mathematics (Education)	0814 Foreign Languages (Education)	0815 Library Science	0816 Biology (Education)	0817 Chemistry (Education)	0818 Physics (Education)	0819 General Science (Education)	0820 Social Studies	0821 Secondary Education, n.e.c.	0899 Other Education (Specify)
A. TOTAL NUMBER OF DEGREES AWARDED																				
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY																				
101 Elementary school teacher - any subject																				
102 Secondary school teacher - any subject																				
103 Middle school teacher - any subject																				
104 Kindergarten teacher																				
105 Special education teacher																				
106 Speech/hearing therapist																				
107 Remedial reading teacher																				
108 Teacher of physically handicapped																				
109 Art/music teacher																				
110 Band/music director																				
137 Librarian																				
111 Vocational/trade school teacher																				
112 Athletic coach																				
113 School nurse																				
114 Adult education teacher																				
115 Visitation/home teacher																				
116 School administrator																				
117 Guidance counselor																				
118 Health, physical education teacher																				
500 Other teachers: college/university																				
525 Teachers except college/university																				
600 Professional, technical workers, not elsewhere classified																				
625 Manager or administration																				
650 Sales workers																				
675 Clerical/kindred workers																				
700 Craftsmen/kindred																				
725 Operations (except transport)																				
750 Transport equipment operations																				
775 Laborers, except farm																				
800 Farmers/farm mgr.																				
825 Farm laborers/foremen																				
850 Service workers, n.e.c.																				
875 Food service workers																				
900 Health service workers																				
925 Personal service workers																				
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975 Household service workers																				
C. EMPLOYMENT LOCATION																				
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c) Elsewhere in Pennsylvania																				
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b) Graduate study--planning or pursuing full-time program																				
c) Not employed: seeking work																				
d) Not employed: not seeking work																				
E. NOT REPORTED																				

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(VI) ENGINEERING

Degree Fields →

Employment and Occupations ↓

	0902 Aerospace, aeronautical, and astronautical engineering	0903 Agricultural engineering	0904 Architectural engineering	0905 Bioengineering and bio-medical engineering	0906/7 Chemical, petroleum engineering	0908 Civil, construction, transportation engineering	0909 Electrical, electronic, and communications engineering	0910 Mechanical engineering	0911/2 8 Geological, geophysical, mining engineering	0913/25 Industrial and management engineering and technologies	0914 Metallurgical engineering	0915 Materials engineering	0916/17 Ceramic and textile engineering	0919 Engineering physics	0920 Nuclear engineering	0921 Engineering mechanics	0922/3 4 Environmental, sanitary, naval, and ocean engineering	0901 Engineering, General	0999 Other, Specify
A. TOTAL NUMBER OF DEGREES AWARDED																			
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY																			
151 Aero-Astro engineering																			
152 Chemical engineering																			
153 Petroleum engineering																			
154 Civil engineering																			
155 Electrical/electronic engineering																			
156 Industrial engineering																			
157 Mechanical engineering, Metallurgical engineering																			
158 Mining/Petroleum engineering																			
159 Engineering n.e.c.																			
160 Sales engineering																			
161 Life/Physical sci.																			
082 Operations res. anal.																			
203 Computer programmers																			
204 Computers syst. anal.																			
205 Engineer-computer application																			
206 Computer specialist, n.e.c.																			
162 Engineering teacher--college/univ.																			
071 Engineering and science technologist, n.e.c.																			
500 Other teachers: college/univ																			
525 Teachers except college/univ																			
600 Professional, technical workers, not elsewhere classified																			
625 Manager or administration																			
650 Sales workers																			
675 Clerical/kindred workers																			
700 Craftsmen/kindred																			
725 Operations (except transport)																			
750 Transport equipment operations																			
775 Laborers, except farm																			
800 Farmers/farm mgr.																			
825 Farm laborers/foremen																			
850 Service workers, n.e.c.																			
875 Food service workers																			
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f) Abroad																			
D. REPORTED NOT EMPLOYED: BY ALTERNATE ACTIVITY																			
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E. NOT REPORTED																			

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VII. FINE ARTS, APPLIED ARTS, ARCHITECTURE, ENVIRONMENTAL DESIGN

Degree Fields →

Employment and Occupations ↓

	1001 Fine Arts, General	1002 Art (Painting, Drawing Sculpture)	1003 Art History Appreciation	1004 Music	1006 Music History Appreciation	1007 Dramatic Arts	1008 Dance	1009 Applied Design	1010 Cinematography	1011 Photography	0299/ Other, Specify 1099	0201 Environmental Design, General	0202 Architecture	0203 Interior Design	0204 Landscape Architecture	0205 Urban Architecture	0206 City, Community, and Regional Planning
A. TOTAL NUMBER OF DEGREES AWARDED																	
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY																	
033 Artist/illustrator																	
034 Art director																	
035 Cartoonist																	
036 Art, drama, music teacher--college/univ.																	
037 Musician																	
038 Composer																	
039 Performing artist																	
040 Commercial designer																	
041 Commercial artist																	
042 Cinematographer																	
043 News photographer																	
044 Writer, journalist																	
045 Photographer, commercial																	
046 Painter, creative																	
047 Sculptor, creative																	
048 Photographer, creative																	
050 Environmental scientist																	
026 Architect																	
027 Architectural engineer																	
028 Interior decorator																	
029 Landscape architect																	
030 Regional planner																	
031 Urban planner																	
032 Naval, marine architect																	
049 Other arch., environmental design, arts professions, n.e.c. specify																	
500 Other teachers: college/university																	
525 Teachers except college/university																	
600 Professional, technical workers, not elsewhere classified																	
625 Manager or administration																	
650 Sales workers																	
675 Clerical/kindred workers																	
700 Craftsmen/kindred																	
725 Operations (except transport)																	
750 Transport equipment operations																	
775 Laborers, except farm																	
800 Farmers/farm mgr.																	
825 Farm laborers/foremen																	
850 Service workers, n.e.c.																	
875 Food service workers																	
900 Health service workers																	
925 Personal service workers																	
950 Protective service workers																	
975 Household service workers																	
C. EMPLOYMENT LOCATION																	
a) In same county as college or university																	
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e) Elsewhere in U.S.																	
f) Abroad																	
D. REPORTED NOT EMPLOYED: BY ALTERNATE ACTIVITY																	
a) Military service																	
b) Graduate study--planning or pursuing full-time program																	
c) Not employed: seeking work																	
d) Not employed: not seeking work																	
E. NOT REPORTED																	

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VIII HEALTH

Degree Fields →

Employment and Occupations ↓

	1202 Hospital and Health Care Administration	1203 Nursing	1211 Pharmacy	1208 Occupational Therapy	1212 Physical Therapy	1213 Dental Hygiene	1214 Public Health	1215 Medical Record, Librarianship	1220 Speech Pathology, Audiology	1223/4 Medical, Dental Laboratory Technologies	1225 Radiologic Technologies	1201 Health Professions, General	1299 Other Health (Specify)
A. TOTAL NUMBER OF DEGREES AWARDED													
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY													
183 Inspector, not specified													
184 Health administrator													
185 Practical/registered nurse													
186 Occupational therapist													
187 Physical therapist													
188 Pharmacist													
189 Dental hygienist													
190 Public health official													
191 Medical record librarian													
192 Medical/dental secretary													
193 Medical/dental technician													
194 X-ray technician, therapist													
195 Clinical social worker													
196 Health technologist, technician, n.e.c.													
197 Other health professions (specify)													
198 Health professions teacher--college/univ.													
113 School nurse													
118 Health, phys. ed. teacher--college/univ.													
500 Other teachers: college/university													
525 Teachers except college/university													
600 Professional, technical workers, not elsewhere classified													
625 Manager or administration													
650 Sales workers													
675 Clerical/kindred workers													
700 Craftsmen/kindred													
725 Operations (except transport)													
750 Transport equipment operations													
775 Laborers, except farm													
800 Farmers/farm mgr.													
825 Farm laborers/foremen													
850 Service workers, n.e.c.													
875 Food service workers													
900 Health service workers													
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975 Household service workers													
C. EMPLOYMENT LOCATION													
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c) Elsewhere in Pennsylvania													
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e) Elsewhere in U.S.													
f) Abroad													
D. REPORTED NOT EMPLOYED: BY ALTERNATE ACTIVITY													
a) Military service													
b) Graduate study--planning or pursuing full-time program													
c) Not employed: seeking work													
d) Not employed: not seeking work													
E. NOT REPORTED													

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(IX.) HOME ECONOMICS

Degree Fields →

Employment and Occupations ↓

	1302 Home decoration and home equipment	1303 Clothing and textiles	1304 Consumer economics and home management	1305 Family relations and child development	1306 Foods and nutrition	1307 Institutional management and cafeteria management	1301 Home economics, General
A. TOTAL NUMBER OF DEGREES AWARDED							
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY							
176 Home economist							
177 Interior decorator							
178 Textile expert							
179 Fashion merchandiser							
180 Dietician, nutritionist							
181 Counselor, not specified							
182 Hotel, restaurant management							
183 Inspector, not specified							
199 Home economics teacher--college/univ.							
200 Other home economics professions (specify)							
500 Other teachers: college/university							
525 Teachers except college/university							
600 Professional, technical workers, not elsewhere classified							
625 Manager or administration							
650 Sales workers							
675 Clerical/kindred workers							
700 Craftsmen/kindred							
725 Operations (except transport)							
750 Transport equipment operations							
775 Laborers, except farm							
800 Farmers/farm mgr.							
825 Farm laborers/foremen							
850 Service workers, n.e.c.							
875 Food service workers							
900 Health service workers							
925 Personal service workers							
950 Protective service workers							
975 Household service workers							
C. EMPLOYMENT LOCATION							
a) In same county as college or university							
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c) Elsewhere in Pennsylvania							
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e) Elsewhere in U.S.							
f) Abroad							
D. REPORTED NOT EMPLOYED: BY ALTERNATE ACTIVITY							
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b) Graduate study--planning or pursuing full-time program							
c) Not employed: seeking work							
d) Not employed: not seeking work							
E. NOT REPORTED							

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(X.) PHYSICAL SCIENCES, MATHEMATICS, COMPUTER & INFORMATION SCIENCES

Degree Fields →

Employment and Occupations ↓

	1903/4 Molecular, nuclear physics	1902 Physics, General	1906 Inorganic chemistry	1907 Organic chemistry	1908/9 Physical and analytic chemistry	1905 Chemistry, General	1911/12 Astronomy, astrophysics	1913 Atmospheric sciences and meteorology	1914/15 16 Geology, geochemistry, geophysics, seismology	1917 Earth sciences, General	1918 Paleontology	1919 Oceanography	1920 Metallurgy	1901 Physical sciences, General	1999-1 Other physical sciences	1999 Other physical science, Specify	1702 Statistics	1703 Applied mathematics	1701 Mathematics, General	0702 Information sciences and systems	0703 Data processing	0704 Computer programming	0705 Systems analysis	0701 Computer and information sciences, General	0799 Other math, computer sciences (Specify)
A. TOTAL NUMBER OF DEGREES AWARDED																									
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY																									
226 Physicist																									
227 Marine scientist																									
228 Chemist																									
229 Astronomer																									
230 Meteorologist																									
231 Geologist																									
232 Paleontologist																									
233 Oceanographer																									
234 Mineral scientist, economist																									
236 Life and physical sciences, n.e.c.																									
237 Statistician																									
238 Mathematician																									
239 Computer programmer																									
240 Computer systems analyst																									
241 Engineer-computer applications																									
242 Computer specialist, n.e.c.																									
243 Other physical sciences, math, computer and information science professions - n.e.c. (Specify)																									
244 Physical sciences teacher--college/university																									
245 Mathematics, computer and informational sciences teacher--college/univ.																									
500 Other teachers: college/university																									
525 Teachers except college/university																									
600 Professional, technical workers, not elsewhere classified																									
625 Manager or administration																									
650 Sales workers																									
675 Clerical/kindred workers																									
700 Craftsmen/kindred																									
725 Operations (except transport)																									
750 Transport equipment operations																									
775 Laborers, except farm																									
800 Farmers/farm mgr.																									
825 Farm laborers/foremen																									
850 Service workers, n.e.c.																									
875 Food service workers																									
900 Health service workers																									
925 Personal service workers																									
950 Protective service workers																									
975 Household service workers																									
C. EMPLOYMENT LOCATION																									
a) In same county as college or univ.																									
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D. REPORTED NOT EMPLOYED: BY ALTERNATE ACTIVITY																									
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E. NOT REPORTED																									

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(XI.) PUBLIC AFFAIRS & SERVICE AREA STUDIES, INTERDISCIPLINARY STUDIES

Degree Fields →

Employment and Occupations ↓

	2101 Community services, General	2102 Public administration	2103 Parks and Recreation Mgmt.	2104 Social work and helping services	2105 Law enforcement and corrections	2106 International Public Service	0301 Asian studies	0305 African studies	0307 Russian and Slavic studies	0308 Latin American studies	0309 Middle Western studies	0310 European studies	0313 American studies	0314 Pacific area studies	0399 Other area studies (Specify)	4901 General liberal arts & studies	4902 Biological & physical sciences	4903 Humanities & social sciences	4904 Engineering & other disciplines	4999 Other interdisciplinary studies
A. TOTAL NUMBER OF DEGREES AWARDED																				
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY																				
625 Managers or administrator, not specified																				
276 Recreation worker																				
257 Social worker, not specified																				
258 Law enforcement & corrections officer																				
277 Diplomat, aide																				
138 Foreign language teacher--college/univ.																				
139 Language translator																				
031 City planner																				
050 Environmental scientist																				
278 Clergyman																				
256 Sociologist																				
253 Historian																				
251 Anthropologist																				
134 Social scientist, n.e.c.																				
137 Librarian																				
162 Life/physical scientist																				
163 Engineer, not specified																				
071 Engr., sci. technicians, n.e.c.																				
051 Biologist, biological scientist																				
279 Other public affairs, etc. professions																				
500 Other teachers: college/university																				
525 Teachers except college/university																				
600 Professional, technical workers, not elsewhere classified																				
650 Sales workers																				
675 Clerical/kindred workers																				
700 Craftsmen/kindred																				
725 Operations (except transport)																				
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775 Laborers, except farm																				
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E. NOT REPORTED																				

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(XII.) SOCIAL SCIENCES
PSYCHOLOGY

Degree Fields →

Employment and Occupations ↓

	2202/3 Anthropology, Archaeology	2204 Economics	2205 History	2206/15 Geography, Demography	2207 Political science, government	2208 Sociology	2209 Criminology	2210 International Relations	2211 Afro-American Studies (Black Culture)	2214 Urban Studies	2201 Social Sciences, General	2299 Other Social Science (Specify)	2002 Experimental Psychology	2003 Clinical Psychology	2004 Psychology for counseling	2005 Social psychology	2006/7 Psychometrics, Statistics	2008 Industrial Psychology	2009 Developmental Psychology	2010 Physiological Psychology	2099 Other Psychology, Specify
A. TOTAL NUMBER OF DEGREES AWARDED																					
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY																					
251 Anthropologist, Archaeologist, Ethnographer																					
252 Economist																					
253 Historian																					
254 Geographer, Demographer																					
255 Political Scientist																					
092 Lawyers																					
256 Sociologist																					
257 Social Worker, not specified																					
258 Criminologist, Law Enforcement, Corrections Officer																					
133 Linguist																					
030/31 Regional, Urban Planner																					
134 Social Scientist, n.e.c.																					
259 Social Science, Psychology Teacher--college/university																					
500 Other teachers: college/university																					
525 Teachers except college/university																					
600 Professional, technical workers, not elsewhere classified																					
625 Manager or administration																					
650 Sales workers																					
675 Clerical/kindred workers																					
700 Craftsmen/kindred																					
725 Operations (except transport)																					
750 Transport equipment operations																					
775 Laborers, except farm																					
800 Farmers/farm mgr.																					
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d) Not employed: not seeking work																					
E. NOT REPORTED																					

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Note on the Author

WILLIAM TOOMBS is research associate and assistant director of the Center for the Study of Higher Education. He received a Ph.D. from the University of Michigan and an M.A. from the University of Pennsylvania. Prior to joining the Center, he served on the staff of the Rackham School of Graduate Studies at Michigan. Dr. Toombs has taught sociology and held a deanship in student affairs at Drexel University. His research interests include graduate education, manpower influences on educational policy, faculty development, and the educational effects of sponsored research.

Center for the Study of Higher Education
The Pennsylvania State University

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The Center's studies are designed to be relevant not only to the University and the Commonwealth of Pennsylvania, but also to colleges and universities throughout the nation. The immediate focus of the Center's research falls into the broad areas of governance, graduate and professional education, and occupational programs in two-year colleges.

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SELECTED PUBLICATIONS AVAILABLE FROM THE CENTER FOR THE STUDY OF HIGHER EDUCATION

Monographs

Human Services Occupations in the Two-Year College: A Handbook, Theodore E. Kiffer and Martha Burns, May 1972.

Pennsylvania Community College Faculty: Attitudes Toward Collective Negotiations, John W. Moore, and *Career Patterns and Educational Issues*, Robert A. Patterson, May 1971.

Institutional Self-Study at The Pennsylvania State University, Kenneth P. Mortimer and David W. Leslie (eds.), December 1971.

Numbered Reports

Students and Unions, Neil S. Bucklew, July 1973, Report No. 22.

Compensatory Education in Two-Year Colleges, James L. Morrison and Reynolds Ferrante, April 1973, Report No. 21.

Pennsylvania's "State-Owned" Institutions: Some Dimensions of Degree Output, William Toombs and Stephen D. Millman, February 1973, Report No. 20.

The Trend Toward Government Financing of Higher Education Through Students: Can the Market Model be Applied?, Larry L. Leslie, January 1973, Report No. 19.

The Rationale for Various Plans for Funding American Higher Education, Larry L. Leslie, June 1972, Report No. 18.

Collective Bargaining: Implications for Governance, G. Gregory Lozier and Kenneth P. Mortimer, July 1972, Report No. 17.

Productivity and the Academy: The Current Condition, William Toombs, May 1972, Report No. 16.

Exceptional Graduate Admissions at The Pennsylvania State University, Manuel G. Gunne and Larry L. Leslie, March 1972, Report No. 15.

The Quality of Graduate Studies: Pennsylvania and Selected States, Stephen D. Millman and William Toombs, February 1972, Report No. 14.

Goals and Ambivalance: Faculty Values and the Community College Philosophy, Karen L. Bloom, Angelo C. Gillie, and Larry L. Leslie, November 1971, Report No. 13.

Governance and Emerging Values in Higher Education, Kenneth P. Mortimer, Stanley O. Ikenberry, and G. Lester Anderson, September 1971, Report No. 12.

The Academic Senate at The Pennsylvania State University, Kenneth P. Mortimer and David W. Leslie, August 1971, Report No. 11.

Professional Education: Some Perspectives, 1971, Larry L. Leslie, Kenneth P. Mortimer and G. Lester Anderson, August 1971, Report No. 10.

Centers and Institutes at The Pennsylvania State University: A Case Study, Mary M. Norman, March 1971, Report No. 9.

New Careers in Human Services: A Challenge to the Two-Year College (A Preliminary Report), Martha A. Burns, March 1971, Report No. 8.

The Academy and General Education, Stanley O. Ikenberry, December 1970, Report No. 7.

A Profile of Proliferating Institutes: A Study of Selected Characteristics of Institutes and Centers in 51 Land-Grant Universities, Stanley O. Ikenberry, November 1970, Report No. 6.

Roles and Structures for Participation in Higher Education Governance: A Rationale, Stanley O. Ikenberry, August 1970, Report No. 5.

Higher Education and the Black Atypical Student, W. Frank Hull, IV, February 1970, Report No. 4.

Colloquy: A Student-Initiated Reform in Higher Education, W. Frank Hull, IV, February 1970, Report No. 3.

The Changing College Curriculum—Issues and Implications, G. Lester Anderson, and *Instructional Systems in Higher Education—Specifications for Individualization*, Stanley O. Ikenberry, January 1970, Report No. 2.

The "Special Admission" Student and the College, W. Frank Hull, IV, November 1969, Report No. 1.

Conference Reports

The Third Annual Pennsylvania Conference on Post-Secondary Occupational Education, Angelo C. Gillie, June 1972.

The Second Annual Pennsylvania Conference on Post-Secondary Occupational Education, Angelo C. Gillie, June 1971.

Post-Secondary Occupational Education: An Overview and Strategies, Angelo C. Gillie, January 1970.

Bibliographies

Selected Bibliography in Higher Education, September 1969, Revised April 1972.

Student Unrest on the American Campus, David W. Leslie, November 1969.

Bibliographies (continued)

The Black Student in Higher Education, W. Frank Hull, IV, November 1969.

Selected Bibliography on the Concept of Leadership, Robert Smedley, June 1970.

Occasional Papers

Naomi V. Ross, *Community College Teacher Preparation Programs in the U.S.: A Bibliography with Introductory Notes*, August 1972.

G. Lester Anderson, Kenneth Mortimer, W. Frank Hull, IV, David Leslie, *Academic Senates: Some Models with Background Material*, March 1970.

Harold Richard, *Some Considerations Involved in Changing the Male/Female Ratio at University Park*, June 1970.